HANDBOOK OF ORGANIZATIONAL MEASUREMENT

JAMES L. PRICE
AND
CHARLES W. MUELLER

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UNIVERSITY OF IOWA

Pitman Publishing Inc.

A Longman Inc. Company

Pitman Publishing Inc.
1020 Plain Street
Marshfield, Massachusetts 02050

Longman Inc.
95 Church St.
White Plains, N.Y. 10601

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Library of Congress Cataloging in Publication Data

Price, James L.
Handbook of organizational measurement.

Bibliography: p.
Includes index.
1. Organization—Research. 2. Sociometry.
I. Mueller, Charles W. II. Title.
HM131.P728 1986 302'.072 85–8136
ISBN 0–273–01989–5

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Manufactured in the United States of America
10 9 8 7 6 5 4 3 2 1

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Acc no- 15384

ACKNOWLEDGMENTS

We had the opportunity to review the literature for this book in two measurement seminars that we conducted at The University of Iowa in the Spring semesters of 1982 and 1984. It was a pleasure working with the graduate students in these seminars and we are appreciative the fact that the Sociology Department allows these specialized research–teaching efforts.

James Curry commented on different parts of the manuscript. His cogent comments are appreciated.

A special word of appreciation is due Mary Blegen. She participated in one of the seminars and served as our research assistant for the last two years. Her assistance was invaluable during all phases of the research; without her help we never would have made the deadline for the manuscript insisted upon by the publisher.

The office staff in the Sociology Department was fantastic, especially in the final stages of the manuscript. At the risk of offending several other staff members, we must especially thank Mary Smith and Fern Hudson. They, and their marvelous word processors, were very productive and patient. Three student workers, Debra Magrosky, Jeffrey Silha, and Cathy Colony, were also very helpful in making the final revisions.

1

INTRODUCTION

STATEMENT OF PURPOSE

With this handbook we attempt to achieve four objectives. The first objective is to *promote standardization of the measures used in the study of work organizations*. Different researchers studying turnover, for example, should use the same measures. The use of identical measures by different researchers facilitates comparison of results and makes it easier to build and test theory. It is, of course, possible to build theoretical models without standardized measures, and to some extent the estimation of models with different measures serves a useful purpose. If valid, models should be able to withstand testing with different measures. Model-building, however, generally proceeds most rapidly with standardized measures.

Our second objective in this handbook is to *promote standardization of labels for concepts used in the study of work organizations*. The building of theoretical models is again facilitated if, for instance, all researchers who are studying the movement of individuals across the membership boundaries of organizations refer to this phenomenon as "turnover." Researchers may overlook key data pertaining to this movement because, rather than being labeled "turnover," the data are referred to under such diverse labels as "attrition," "exits," "quits," "separations," "mobility," and "dropouts." Experienced researchers may develop the ability to locate similar conceptual material under various labels. Model-building is made easier, however, if uniform labels are used for the same ideas. The standardization of labels is especially needed in the study of organizations, because so many disciplines and applied areas are interested in the subject.

As our third objective, we seek to *improve measurement in the study of work organizations*. Mere compilation of this handbook has revealed deficiencies that require correction. Some widely used organizational concepts, such as the violence of conflict, have no acceptable measures. As this handbook was being compiled, we also became aware of various steps that can be taken to improve organizational measurement. We will regularly make suggestions regarding these steps. We feel under no compulsion to attempt improvement ourselves, since our basic interests lie elsewhere; we do believe it is necessary to indicate what needs to be done.

Our fourth and final objective for the handbook is to *make it easier to successfully teach introductory courses in work organizations*. One of us (Price) has taught such courses for more than two decades, and he has found that students in these courses have great difficulty with the multiplicity of terms that characterizes the study of organizations. This difficulty is aggravated if the professor has students from different disciplines and applied areas, and if the professor attempts to present material from these fields. When the 1972 edition of this handbook was issued, Price used it in his introductory courses, and it seemed to make it easier for the students to manage more successfully the conceptual confusion that exists in the study of organizations. Other professors with whom we have talked have had the same experience. We thus wish to emphasize the potential value of the handbook as an aid in teaching.

As has been already indicated, the handbook focuses only on work organizations—social systems in which the members work for monetary income. The members are, in short, employees. Excluded by this focus are churches, trade unions, professional associations, trade associations, and fraternal orders—social systems commonly referred to as "voluntary associations." Also excluded are communities, societies, families, crowds, and gangs. This focus on work organizations makes the task of the handbook more manageable. Other scholars will have to compile measurement handbooks for these other social systems.

The handbook is intended for professors and students in the area of work organizations. Although a diversity of disciplines and applied areas will be represented by these professors and students, the most important disciplines will be economics, psychology, and sociology, and the most important applied areas will be business, education, public administration, and health. Courses in work organization will be labeled in many ways, but most of the labels will use, in some manner, one of three labels: organization, administration, and management. It is not likely that the handbook will be used below the college and university level. The handbook is not intended for managers and the general public. Managers who were educated in colleges and universities should, however, be able to understand most of the material quite well. The handbook would be different in significant ways were it intended for managers and the general public.

MEASUREMENT

The classic definition of measurement comes from Stevens (1951): "the assignment of numerals to objects or events according to rules." Typically four levels of measurement are identified: nominal, ordinal, interval, and ratio. Including the nominal level allows for simple classification as a type of measurement. For example, measurement has been achieved when organizations in different industries are assigned different numerals (or any symbols for that matter) for the purpose of classifying by industry.

When the statistical techniques now available are considered, however, this scheme of four levels of measurement must be viewed as outdated (Bohrnstedt and Knoke 1982). The most useful distinction today is between discrete and continuous variables. Discrete variables come close to what have traditionally been called nominal; they are variables by which the researcher classifies persons, objects, or events according to the kind or quality of their attributes. These discrete variables can be either dichotomous or polychotomous; the distinquishing characteristic is that the number assigned to the person, object, or event is based on whether it has the quality or characteristic being measured. Discrete variables can be either orderable or nonorderable, a distinction that rests on whether the phenomenon being measured can be rank-ordered with regard to more or less. Continuous measures subsume what have been called interval and ratio variables, and allow for fractional values. Examples would be pay, turnover rate, and productivity. Such measures assume that the underlying variable is continuous, even when the measurement device may not adequately capture this.

The value of the discrete–continuous distinction is that statistical techniques in use today are categorized in this way. There are, of course, always the "gray area" measures for which the level of measurement is not clear cut. The so-called ordinal level measures have, for example, always posed problems. The rule of thumb today regarding ordinal measures is that if the underlying variable is continuous, the statistical techniques for continuous variables should be used. The literature supports the claims that the statistical power gained is substantial and that the robustness of most of these techniques makes violation of statistical assumptions a minor problem. Most of the measures we present in this handbook have underlying continuous metrics.

Validity and Reliability of Measures[1]

Measurement as an end in itself, of course, will not add much to the body of knowledge in a chosen area. Because of this, the two criteria of *validity* and *reliability* have emerged as gauges for assessing the utility of measures in building a body of knowledge. There exist numerous strategies for assessing both validity and reliability, from which the researcher must choose.

Validity. Validity refers to the linkage between the measure and the underlying construct, that is, the degree to which the measure captures the construct it is designed to measure. It is generally posited that validity is to be sought prior to establishing reliability, since having a reliable measure that does not capture the construct will not aid in building the body of knowledge. Several types of validity have received attention in the literature.

Criterion-related validity refers to the degree of correspondence between the measure and some other accepted measure, the criterion. One form of this is referred to as concurrent validity, where the criterion and the measure are measured at the same point in time. Another form is predictive validity, where the measure is expected to be highly related to some future event or behavior, the criterion. Criterion-related validity is not assessed much in organizational research. A major reason for this undoubtedly is the lack of criterion measures. Another is a more practical one. Why attempt to devise a new and different measure if a criterion measure (which is accepted as valid) already exists?

Content validity refers to the extent to which the measure adequately reflects a specific domain of content. This is generally discussed in terms of whether the items used in the measure represent a reasonable sampling of the total items that make up the domain of content for the construct. As with criterion-related validity, this type is not used much. One reason is that it is not easy to achieve agreement on the domain of content for the construct. Another reason is that there are no statistical criteria for assessing the degree of content validity.

Construct validity is probably the most often cited form of validity assessment. It refers to the extent to which the empirical relationships based on using the measure are consistent with theory about the concept. Actually assessing this involves specification of the theoretical relationship, obtaining the empirical relationship, and then comparing the two. Empirical verification of the hypothesized relationship is offered as support for the construct validity of the measure. One of the problems with such a strategy is that no standards are provided for deciding the magnitude of the empirical relationship necessary for claiming validity. For example, if the theory says *X* causes *Y*, and the correlation between the two is 0.25 and statistically significant, should we infer construct validity?

A second problem concerns interpretation difficulties when the empirical relationship does not match the theory. Some of the reasons for this include: The theory is incorrect (i.e., there is no relationship after all); the procedure to check the relationship is incorrect (e.g., there is a nonlinear relationship, but only a linear relationship was checked); the invalidity may be in the measure of the other concept(s) in the relationship; the measure may actually lack construct validity (this is usually what is inferred).

A third problem with applying construct validity checks is that many times the theory is incomplete and does not clearly specify whether the relationship being checked is zero-order or a partial relationship net of other variables. Our reading of the literature indicates that most assessments of construct validity involve zero-order relationships. Theories, however, are usually multivariate and require that construct validity be assessed with regard to net relationships. The final problem with assessing construct validity was alluded to above and refers to the magnitude of relationship. Most of our theories are in such an embryonic stage that we are unwilling to hypothesize the strength of relationships among variables. This makes the assessment of construct validity less than precise.

Convergent and *discriminant validity* are terms that emerged in the literature primarily as a result of the work on multitrait–multimethod matrices by Campbell and Fiske (1959). Although the technique recommended by these authors is not used much today, the two validity concepts have remained. In general terms, convergent validity exists if different measures (methods) of the same concept are highly correlated, whereas discriminant validity exists if different concepts measured by the same method are lowly correlated. In practice today, these concepts are often applied to the results of factor analysis, where multiple-item measures are said to have both convergent and discriminant validity if the items designed to measure a construct load together and other items designed to measure other constructs do not load on this factor.

The *face validity* criterion is usually applied post hoc when the researcher is using secondary data and argues that particular measures, because of the content and intent of the questions, appear to measure the concept of interest. This is sometimes confused with content validity.

Face validity is not usually recommended because of the lack of criteria for deciding what is and what is not valid.

Reliability. Reliability refers to the consistency of a measure—will the measure produce the same results when used again and again? Psychometrically, unreliability is referred to as random measurement error. No measurement device will continually produce the exact true score, but a reliable one will ensure that the observed values do not differ much from the true value and when they do, they will balance out with values above and below the true value.

The most common means of assessing reliability is internal consistency measures, such as Cronbach's Alpha. Such techniques assess the degree to which the items used in the measure are internally consistent, that is, intercorrelated. Most measures of this kind range from zero to one, with the highest value indicating the greatest reliability. Although recommendations vary, 0.60 is generally viewed as the minimum acceptable level for using a measure.

Test–retest methods rely on correlating the same measure for the same cases at two or more times. Such a strategy is necessary when single-item measures are used, but there are at least two problems associated with its use. First, a low correlation may indicate actual change in the variable being measured rather than unreliability of the measure. Another problem is reactivity, which would affect the reliability coefficient if values at the later time are affected by prior use of the same measure. These two problems place the researcher in a difficult position, since reactivity is likely to be less of a problem if the time between measures is increased, but the possibility of the variable actually changing is increased with the longer time span.

Measurement Issues

There have been and continue to be a number of measurement issues that must be confronted by anyone conducting organizational research. Although these are often referred to, the organizational literature would lead one to conclude that some scholars are still unaware of these issues, or if they are aware, they choose not to address them. Our objective is to identify and briefly describe these issues. It is not our intent to present an in-depth discussion of the issues and the large body of literature associated with each. Four issues are treated: the appropriateness of objective (institutional) versus objective (survey) measures of organizational characteristics; the appropriateness of drawing inferences about one level of analysis on the basis of data from another level; the use of data aggregated from individuals to represent work-unit or organizational characteristics; and the possibility that perceptual measures of organizational characteristics may be influenced by informational cues, the individual's frame of reference, and job attitudes.

Objective versus Subjective Measures. One of the issues in measurement that has received considerable attention in the last ten years is the distinction between what are often called "objective" and "subjective" measures. Objective measures generally are those that involve direct assessment of organizational properties through the examination of organizational charts, personnel records, job descriptions, and other organization documents. Interviews with "experts," such as top managers, about these properties are also identified as providing objective measures. Subjective measures are usually identified as those obtained by sampling organizational employees and asking them, by questionnaire or interview, their perceptions of organizational properties. These employee responses are usually aggregated in some manner (using the mean, for example) to obtain the measure of an organizational characteristic.

We agree with those who have argued that the terms "objective" and "subjective" are unfortunate choices for differentiating these two types of measures. For example, why should the perception of a top manager be considered objective when the perception of a lower-level employee is considered subjective? We concur with Campbell's (1977) position that "any objective measure is a subjective measure once removed." Another reason for not using these two terms is the implication that the objective measures are more valid and reliable than the subjective. Van de Ven and Ferry view this claim as ". . . patent nonsense" (1980, p. 60). In response to these criticisms, the labels *institutional measures* and *survey measures* have been substituted by some for objective and subjective, respectively. We, however, will retain the conventional labels of objective and subjective, to be consistent with the bulk of the literature.

We are in no position to argue that one of these types of measures is to be preferred over the other. As will be discussed, we believe that there is a place for both types of measures in organizational research. Researchers must be aware, however, that the literature on the issue leads to a singular conclusion: When the two types of measures are used to measure the same underlying construct, the correlations among the measures are not large (Pennings 1973; Sathe 1978; Ford 1979; Payne and Pugh 1976). The only inference that can legitimately be drawn from this is that these types of measures do not measure the same underlying constructs.

We believe that there is a certain intuitive appeal to the so-called objective measures, since most theories of the structural characteristics of organizations seem to refer implicitly to formal structural properties and not to employee perceptions. Ford (1979) refers to this distinction as between the "designed structure" and the "emergent structure." It seems reasonable to assume that both types of structure operate causally in organizational processes. We clearly need theory and research on this topic. It is a real mistake to argue that one type of structure is the only casual property involved. For example, anyone interested in turnover as the dependent variable should be willing to accept the possibility that the designed degree of centralization *and* the emergent (perceived) degree of centralization both have impact on the magnitude of turnover. Consistent with Ford's argument, we believe that future theory must incorporate both designed and emergent structures as variables, and the research must investigate how both operate causally. As will be described in the concluding chapter of this handbook, there are now statistical and computer techniques specifically designed for multiple-construct and multiple-indicator situations such as these.

Aggregation Fallacies. The first issue relating to aggregation is the use of data measured at one level to make inferences about another level. One form of this is usually called the "ecological fallacy," which refers to erroneously making inferences about individuals based on data from the group of which the individuals are members. As an example, finding that the median pay and turnover rate of an organization are negatively related and then arguing that employees who are paid the most are least likely to turn over would represent the ecological fallacy. The other form is labeled the "individualistic fallacy," which refers to erroneously drawing inferences about the group or organization from data obtained from individual members. As an example, if a researcher finds that employees involved in highly routinized jobs are more likely to leave the organization, and then concludes that turnover rates are highest in organizations with the most routinized activities, then the individualistic fallacy is being committed.

Most scholars are not willing to offer hard and fast rules for how to handle these situations. For several decades the rule was that any inference from one level to another is patently incorrect. The experts now tend to agree that such inferences are not always erroneous. Unfortunately, there is less research on the topic than one would assume, given the general awareness of and concern with the issue. Moorman (1979) demonstrates, for example, that the commonly held belief that aggregate-level correlations are larger than individual-level correlations is not always the case.

Aggregating Individual-Level Data. Another issue that must be considered when the perceptual data from individuals are used to measure structural properties at the work-unit or organization level is whether the aggregated individual level data can appropriately be used to represent unit or organization characteristics. This question is debated most vociforously in the literature about organizational climate. In particular, use of such aggregated measures is viewed as appropriate only if the respondents agree on the climate variable. This is necessary since ". . . agreement implies a shared assignment of psychological meaning and provides a composition theory for climate at different levels of analysis" (James 1982, p. 228). If a climate is to operate as a causal factor on all members of the work unit, it must be perceived similarly by all. James provides a good discussion of how properly to measure agreement. The point is, we believe, that if the theory requires agreement among respondents, then such checks should be made.

We do not believe that this agreement criterion has to be applied to all measures based on aggregated individual-level data. For example, if the objective is to use aggregated responses from employees in a work unit to measure centralization in the unit, then agreement on the level of centralization in that unit probably would not be expected and would not be necessary for the analysis. Extending classic test theory, one would assume that a particular level of centralization exists in the unit (referred to as the true score), and that respondent differences in assessing that centralization represent measurement error (random error or unreliability). Because this is viewed as a random component, the mean of these responses would be an unbiased estimator of the true score if all of the members or a random sample of the work-unit members are used in its computation.

This argument has been questioned for at least two reasons. First, such a strategy is appropriate only when the aggregation involves the members of a unit for which a single true score exists. For example, using the mean for a pediatrics unit in a hospital is probably reasonable, but aggregating across pediatrics and gynecology to obtain a mean to represent both, or aggregating across all hospital units to obtain the degree of centralization of the hospital, is questionable. In fact, if the levels of centralization are different across the units, then simple aggregation methods could be very misleading. Nevertheless, there are real theoretical and research concerns with units of analysis that subsume numerous subunits, and more measurement work is necessary to answer questions about how to estimate structural traits at these levels.

A second, related concern is the attempt to separate out the individual and structural effects of variables (Lincoln and Zeitz 1980). These strategies are sometimes referred to as *contextual analyses*. Using them is based on the assumption that there is individual variation within any unit and this, as well as the context, should be examined as meaningful.

Concerns about Perceptual Measures. Much theory and research assumes a fairly definite set of causal relations among task characteristics of jobs and outcome variables such as job satisfaction, commitment, and performance. Several researchers have argued that when perceptual measures of these task characteristics are used, the assumption that these perceived characteristics come causally prior to satisfaction, commitment, etc. must be seriously questioned. In particular, O'Reilly and associates (O'Reilly and Caldwell 1979; O'Reilly et al. 1980) have argued and empirically demonstrated that informational cues about jobs received from others, the individual's frame of reference, and job attitudes all operate to produce variation in employee perceptual assessments of job characteristics. A person's satisfaction with a job even operates to influence that person's perception of the task characteristics. Clearly more research, and preferably longitudinal research is necessary in this area, but the available information supports the view that assessments of task characteristics of jobs are, to a degree, socially constructed, and this construction is conditioned by numerous variables. Since we present a number of constructs that refer to phenomena other than task characteristics of jobs, we are unwilling to make the blanket statement that all measures of structural characteristics by perceptual instruments are susceptible to this problem. We would warn researchers that the issues raised here are significant, and that it is a mistake to assume that perceptual measures of structural properties are not socially influenced or that causal ordering issues are not a problem.

SELECTION CRITERIA FOR MEASURES

Four criteria guided the selection of the measures for this handbook. The first criterion is *quality*. Where there is a set of measures available for a concept, we give preference to the measure(s) whose validity and reliability are the highest. Historically important measures are not included if other measures appear to be more valid and reliable. Similarly, widely cited and currently used measures are excluded if alternatives are available with higher validity and reliability. Quality is, of course, a relative matter and will vary among the concepts examined. The measures for some concepts will exhibit impressive validity and reliability, whereas the measures of other concepts will be less impressive.

The second criterion is *diversity*. If several equally valid and reliable measures of a concept are available, and if two different types of measures are included among these measures, we give preference to the inclusion of different measures, such as one from each type. Since space in the handbook is limited, application of this criterion will sometimes result in the exclusion of some impressive measures. This is unfortunate, but space is not sufficient for inclusion of all worthy measures. Diverse measures are preferred because they facilitate the assessment of theoretical propositions. Two different measures of a concept that produce similar results provide more convincing evidence for the theory than similar results obtained by two measures of the same type.

Preference is also given, as our third criterion, to relatively *simple* measures. If two questionnaire measures have approximately the same validity and reliability, and if one measure is much more complex than the other, we give preference to the simpler measure. The relationale is that the simpler measures are likely to be used more widely by researchers, and widespread use will produce more comparable data, thereby facilitating the development of theoretical models.

Our fourth and final criterion is a preference for *easily available* measures, the best examples being those which appear in books or journals regularly included in university and college libraries. Other things being equal, we are biased against measures that circulate informally among researchers, appear in "working papers," are part of dissertations, or are included in "proceedings" issued by various types of professional associations. Our belief is that measures that are easily available will be used more widely and will produce more comparable data, which in turn makes it easier to build theoretical models. Easily available measures, especially those which appear in books and journals, have also typically been subjected to considerable peer review, thereby increasing the likelihood of obtaining more valid and reliable measures.

Two final comments about these criteria are necessary. First, application of the criteria was guided by the purposes for publishing the handbook, as set forth earlier in this chapter. If our purposes in writing the handbook are furthered, we will have included measures whose psychometric properties are not satisfactory, that present two similar-type measures for the same concept, that are complex, and that are difficult to obtain. In short, we used the criteria as guides and not as rigid procedures.

Second, application of the criteria has resulted in the exclusion of many measures, and we make no attempt to justify the exclusion of these measures. We have examined dozens of measures not included in the handbook, and to attempt to justify each of these exclusions would have significantly lengthened the handbook. We think we have examined all major measures, but time and the comments of our colleagues will serve to reveal the comprehensiveness of our coverage.

FRAME OF REFERENCE

The frame of reference is the set of concepts we have used to organize the handbook. Thirty concepts are included in the frame of reference, extending alphabetically from "absenteeism" to "work load." We use concepts as equivalent to ideas. Each concept, of course, has a label or term to identify it. "Absenteeism" and "work load" are the labels for two concepts in the frame of reference.

We have sought to select for the handbook the concepts and labels used most widely by scholars who study work organizations. There is a surprising amount of agreement regarding the important concepts in the study of organizations, which is a pleasant surprise given the number of disciplines and applied areas interested in this type of study. The most serious problem arises with the labels. The same concept is referred to by a diversity of labels and the same label has many meanings. This terminological confusion is to be expected with the number of different types of scholars involved. There is, however, a fair amount of agreement on the labels, and we emphasize these points of agreement. Our belief is that this standardization of concepts and labels is best furthered by building on areas of agreement.

We are not rigid about adhering to these areas of agreement, however. If we believe organizational scholars are neglecting an important concept, we have included the concept in the handbook. Examples of such concepts are departmentalization, general training, and productivity. We have sometimes departed from widely used labels if we believe these departures contribute to the building of theoretical models. Evaluative labels, such as "bureaucracy," are consistently avoided; we prefer the more neutral label of "administrative staff." Each deviation from an area of agreement is justified.

Based on Price's experience with the 1972 edition of this handbook, let us make five comments about the frame of reference. First, the frame of reference is sensitive to the phenomenon of change. One of the concepts, innovation, is used directly in studies of change. "Process" is often used as an example of the change concept. If process means intervening variables in causal models, then several of the concepts, such as commitment and satisfaction, are often used in this manner. If, on the other hand, process refers to movement, then turnover is an illustration of this usage of process. If process indicates a sequence of events in the operation of an organization, a third meaning of the term, then communication is a process concept. So-called static concepts, such as pay stratification, can also be studied longitudinally rather than cross-sectionally, thereby examining change. In sum, the study of organizational change is an important topic, and the handbook reflects this importance.

Second, the frame of reference is general, ignoring "demographic variables" such as age, sex, seniority, occupation, race, and education. Also excluded are such organizational variables as existence of vested pensions, the unemployment rate, and whether or not the employees are represented by trade unions. Demographic variables are often used as indicators of general concepts, but are not part of our frame of reference. The major problem with these variables is that they have low validity. We have treated these variables, previously termed "correlates," extensively elsewhere (Price 1977, pp. 24–43; Price and Mueller 1981, pp. 21–22; Price and Mueller 1986 forthcoming).

Third, each concept in our frame of reference refers to a single idea. There is no concept for technology, for example, because research on this topic investigates different ideas. Technology, both theoretically and empirically, has multiple meanings. What we have done in this handbook is to separate the material investigated under the label of technology into concepts with single ideas, such as complexity, departmentalization, mechanization, routinization, and standardization. These single ideas can, of course, have dimensions or subsets of less abstract ideas. Complexity, for instance, is commonly subdivided into three dimensions: horizontal, vertical, and number of sites. Dimensionalization is a common feature in this handbook. We were careful, however, not to include as "dimensions" different ideas on the same level of generality. Absenteeism, productivity, and turnover are not viewed as dimensions of effectiveness because they are not subsets of a more general concept of effectiveness, as we have defined the term. Absenteeism, productivity, turnover, and effectiveness are different concepts in the frame of reference. The rationale for single-idea concepts is that disproof is easier in theoretical models with this characteristic. Model estimation is very complicated if the concepts comprising the model have multiple meanings.

Our fourth comment is that the frame of reference refers to different aspects of the operations of organizations. Most of the concepts in the handbook refer to the classic structural variables of major concern to organizational scholars. Examples of these structural variables are autonomy, centralization, and formalization. Some of the concepts, however, refer to orientations of individuals, topics of special interest to the more social-psychologically oriented scholars who study organizations. Commitment, motivation, and satisfaction are illustrations of some of these orientation concepts. Finally, some of the concepts refer to ideas of special concern to demographers, an example of which is size. One dimension of complexity (the number of operating sites) is also sometimes investigated by demographers under the label of "dispersion."

None of our concepts, however, refer to the environment of the organization. The community is, for instance, part of the organization's environment, and it is the task of scholars interested in the community to compile measures for their unit of analysis. Since the concepts of this handbook are general, they will naturally be applicable to social systems other than work organizations, such as communities. Organizational scholars can use environmental measures, such as those for the community, once they are developed. We have not sought to develop a systematic typology for the concepts of our frame of reference. The three-fold typology in this paragraph—structure, orientation, and demography—is not a systematic typology. Typology development is an important topic, and ad hoc typologies, such as the one in this paragraph, are used pragmatically from time to time to organize the data. This is not our goal, however, and we have taken the existing concepts as given and worked with them the best we could.

The fifth and final comment is that the frame of reference is intended to include all major concepts of interest to organizational scholars. No attempt is made, however, to make the frame of reference all-inclusive. We are aware of some excluded concepts, especially in the area of technology. Space limitations do not, however, permit the inclusion of all concepts of interest to organizational scholars.

OUTLINE OF THIS HANDBOOK

The 30 substantive chapters of this handbook are arranged alphabetically, starting with "absenteeism" and ending with "work load," since the handbook is a reference source more like a dictionary than a textbook or a report of a research project. There is also an index to facilitate the location of material not included under the chapter headings. The 1972 edition of the handbook was arranged alphabetically, and this appeared to work well for the users.

Each substantive chapter examines a single concept, but is composed of three parts. There is first a discussion of the concept that is the focus of the chapter. The concept is defined, illustrated, contrasted with other concepts, placed in historical context, and clarified by means of synonyms. Since there is so much terminological confusion in the study of organizations, the conceptual discussions are often fairly extensive. The second part of the typical chapter consists of a general measurement discussion of the chapter's concept. This measurement discussion mostly provides background material for the measurement selection of the chapter. The third part of the chapter presents one or more empirical selections illustrating the measurement of the concept. The illustrative material in these selections is intended to provide sufficient information to replicate the measurement. Researchers who use the measure should not have to consult any other sources to measure the concept.

We have adopted a standardized format for presenting each empirical measurement selection. The selection is described, its instrument of data collection is presented, the computational procedures are indicated, data pertinent to validity and reliability are summarized, comments are offered, and the source of the material is specified. This format is oriented toward presenting the nature of the measurement, while the material about "comments" consists of our opinions about the measurement. The order of the comments follows the order of the format. Comments are first offered about the empirical study itself, then its instrument, next the computation, and so forth. Comments are not always offered about every feature of each selection.

Each of the substantive chapters begins with a conceptual discussion. There are, however, departures concerning the measurement discussion and the empirical selections. For example, in the chapter on the violence of conflict, we discuss the definitional problems and then simply say that no acceptable measures exist. In other instances the measurement discussion sometimes constitutes all the chapter has to offer about the measurement of a concept. In short, there are times when no empirical example is used to illustrate the measure(s) presented. The chapters on effectiveness, productivity, and turnover are illustrations of chapters that have no empirical selections. Even when no empirical selections are used, however, computational procedures are described. The measurement of effectiveness, for instance, can be described without an empirical study presenting the instruments of data collection. We prefer to present a complete empirical study, especially the instrument of data collection, but such a presentation is not always the best way to proceed.

The empirical selections in the chapters are also often supplemented by suggestions for subjective and objective measures for the concepts being examined. No measure was included in the 1972 edition of the handbook unless it was embodied in a published empirical study. Such a selection criterion seemed at the time most likely to provide a set of valid and reliable measures. The 1972 criterion is too restrictive, however, and in this handbook we have used measurement suggestions from any source, especially those relating to instruments to collect objective data.

This more flexible and open approach should, in the long run, better promote the improvement of measurement research in the study of organizations.

NOTES

1. Although the literature on validity and reliability is voluminous, we have found the small volume by Carmines and Zeller (1979) to be an excellent introduction to the basic issues.

2

ABSENTEEISM

Definition

Absenteeism is nonattendance when an employee is scheduled to work (Van der Merwe and Miller 1976, pp. 8–9). The typical absence occurs when an employee telephones the supervisor and indicates that he or she will not be coming to work as scheduled that day. It is the scheduling that is critical. Vacations and holidays, because they are arranged in advance, are not considered absenteeism. Fortunately, the Bureau of Labor Statistics, which collects an immense amount of data about absenteeism, uses a similar definition of absenteeism (Hedges 1973). This similarity makes the data collected by the Bureau especially relevant for scholarly analysis.[1] The definition refers to "employee" because, as indicated in the introductory chapter, work organizations are the focus of the handbook.

Voluntary and involuntary absenteeism are distinguished (Steers and Rhodes 1978), with the exercise of choice serving as the basis for this distinction. An employee choosing to take a day off from scheduled work to transact personal business is an illustration of a voluntary absence. Because no elements of choice are involved, nonattendance due to accidents and sickness are considered instances of involuntary absenteeism. Voluntary absenteeism is usually for a short term—for one or two days typically—whereas involuntary absenteeism is mostly longer-term, generally in excess of two consecutive days. It is difficult operationally to distinguish between these two types of absenteeism—so difficult that some scholars (Jones 1971, p. 44) despair of the distinction—but we believe the distinction is useful and should be retained.[2] Since scholars generally prefer to study events that occur more often, voluntary absenteeism has been the most researched type (Chadwick–Jones et al. 1982, p. 118).

The term "withdrawal" occurs frequently in discussions of absenteeism (Porter and Steers 1973), where it is noted that nonattendance at scheduled work is a form of withdrawal from the organization. Lateness and turnover[3] are also forms of withdrawal, and employees who are low on motivation because their focus is not strongly centered on work can also be viewed as experiencing withdrawal.[4] The concept of withdrawal, at least in its present form, seems to have its source in the Tavistock Institute of Human Relations in London, England.[5] A problem with withdrawal is that it is not precisely defined in such a way that it conceptually encompasses absenteeism, lateness, turnover, and motivation (Price 1977, p. 8). Without this conceptual precision, questions of validity are not easily resolved.

Measurement

The measurement of absenteeism has a long tradition in behavioral science. In the United States, researchers at Harvard (in the School of Business Administration) were concerned with the topic in the 1940s, and there has been a steady stream of publications from Michigan (The Survey Research Center) since the early 1950s. As noted above, the Tavistock Institute in England has been very important as an impetus for contemporary research on withdrawal. Other major scholars in Great Britain (Behrend 1953; Chadwick–Jones et al. 1982; Ingham 1970), who are not part of Tavistock, have also addressed absenteeism measurement issues.

Chadwick–Jones and his colleagues (1982), as will soon be described, use three major measures of absenteeism: time lost, frequency, and number of short-term absences. There is wide support in the literature for the use of these measures, as well as for these researchers' conclusion that voluntary absenteeism is best measured by frequency and short-term absences.[6]

Two measurement issues not treated by Chadwick–Jones and his colleagues require brief discussion. There is first the question of the nature of the distinction between absenteeism and lateness. The consensus seems to be to treat more than four and one-half hours away from work as a day absent; any time less than this is viewed as lateness (Isamberti–Jamati 1962). This distinction is of course arbitrary, but some standardization is necessary to promote comparability among measures; it becomes a major practical concern when collecting data. Second, there is some question as to the applicability of ordinary-least-squares regression analysis to absenteeism data. Hammer and Landau (1981) argue that the generally truncated and skewed nature of the absenteeism data (a substantial number of zero values, more values with a score of one than zero, then a gradual decline in the frequency of larger values) may result in incorrect model estimation with ordinary-least-squares regression analysis. They recommended the use of statistical models designed especially for truncated distributions, such as Tobit analysis.

Measures of absenteeism are nearly always based on organizational records. However, it is also possible to measure absenteeism with data collected by questionnaires and interviews, so-called subjective data. The questionnaire and interview data are less costly for researchers than use of records and make it possible to obtain absenteeism data from the many organizations that do not collect this type of information. There are thus some advantages in using questionnaire and interview data. Two questionnaire items from the work of Bavendam are offered as examples of this type of data. Much research must, of course, be performed concerning the validity and reliability of questionnaire measures of absenteeism. Inclusion of Bavendam's items may help to stimulate this type of research.

CHADWICK–JONES, NICHOLSON, AND BROWN (1982)

Description

The primary concern of this study is explanation of absenteeism from a social exchange perspective, with special attention being given to the role of satisfaction as a determinant. A secondary concern of the study is to suggest measures of voluntary absenteeism. Data were collected from 21 organizations (16 were British and 5 Canadian) over a ten-year period (1970 to 1980). The 21 organizations included both blue-collar and white-collar employees; the organizations were clothing firms (4 organizations), foundaries (4), automated process units (4), public transport companies (4), banks (3), and hospitals (2). A total of 6,411 employees (4,000 males and 2,384 females) were sampled.[7]

Definition

Absenteeism was defined as unscheduled time away from work (p. 116). Chosen and unchosen absences were distinguished, corresponding to voluntary and involuntary absenteeism (pp. 52–60).

Data Collection

The absenteeism data came from organizational records. Reference is made to standardized personnel data, relevant employee records, and individual record cards (pp. 79–81).

Computation

Three measures of absenteeism were used regularly: time lost, frequency, and number of short-term absences (p. 100). Time lost is the total number of working days lost in a year for any reason, frequency is the total number of absences in a year, regardless of duration, and short-term absences is the total number of one-day or two-day absences in a year. Strikes, layoffs, holidays, and rest days were excluded from the computation of time lost. It should be noted that time lost was stated in terms of "days lost" rather than "hours lost," and frequency was often referred to as "the inception rate." It should be stressed that both one-day absences and two-day absences were included in computation of the short-term measure. The inclusion of both of these provides greater measurement stability. Other measures of absenteeism are discussed (pp. 19–23, 63, 83–85), but time lost, frequency, and short-term absences receive the greatest attention.

Frequency and short-term absences are, according to the researchers, the preferred measures of voluntary absenteeism. Both measures will to some extent tap involuntary absence, but it is the time-lost measure that is more sensitive to long-term absences, which are more likely to be involuntary. The exercise of choice, in short, is most apparent in frequency and short-term absenteeism.

The researchers presented little information about means and standard deviations, because their social exchange perspective led them to expect that the three measures would either be organization-specific or would characterize a class of similar organizations. The amount of absenteeism in an organization represents an exchange of benefits between the employer and the employee, and such an exchange is not likely to follow a general pattern across organizations. Means and standard deviations are, however, presented for each of the 21 organizations (pp. 64–75). The computations for time lost, frequency, and short-term absences are stated, with the individual as the unit of analysis. These individual data were apparently aggregated to produce the means and standard deviation for the 21 organizations.[8]

Validity

The strategy of validation followed by the researchers has two elements (pp. 61–78). First, the three measures are correlated with a fourth measure, the Worst Day Index (p. 60),[9] which is based on the difference between the total absence rate on the "worst" (highest) and "best" (lowest) days of the week. The researchers argue that the Worst Day Index reflects chosen absences and should be correlated more highly with frequency and short-term absences than with time lost. The second element of the validation strategy involves correlating the three measures of absenteeism with turnover. The researchers argue that high levels of short-term absences coincide with high turnover, but that high levels of long-term absence, which is more often sickness, are not associated with turnover. If this argument holds, then time lost, since it represents more long-term absences, should be less highly related to turnover than frequency and short-term absences.

The results are as expected. Especially interesting are the strong correlations between short-term absenteeism and the Worst Day Index, which support the short-term measure as a sensitive indicator of voluntary absenteeism. The correlations with turnover of time lost, frequency, and short-term absenteeism are, respectively, 0.12, 0.35, and 0.49 (significant at 0.05).

Reliability

Information about reliability is presented in the measurement discussion of voluntary absenteeism. Split-half coefficients are presented for the 16 British organizations (pp. 62–63). Time lost has no negative coefficients and only one coefficient that is very low (0.17). Three negative and one zero coefficient are found for frequency. Short-term absenteeism has one negative coefficient and 4 that are very low (0.18, 0.10, 0.08, and 0.06). Time lost thus turns out to be the most reliable measure, with the short-term measure being the next most reliable.

Comments

This research certainly represents a major empirical effort in the study of absenteeism, and any scholar who works in this area will have to give it serious attention. Unfortunately, however, the lack of the standard format—problem, causal model, methodology, results, and summary—

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makes it difficult for readers to abstract the basic descriptive data to understand what the study is about. On the positive side, the diversity of the sample and site is commendable and is necessary to demonstrate the plausibility of the authors' social exchange perspective.

The definitions used for absenteeism and the voluntary–involuntary typology in the study are identical to those that we propose. More time should have been devoted to defining absenteeism, however. The voluntary–involuntary typology, which is the more important topic, is given a thorough discussion; everything that should be noted is noted.

The researchers carefully describe the sources of their data. As is true of most research on absenteeism, organizational records are the source used. The researchers casually mention a feature of their work that requires emphasis, namely that no organization was selected unless there existed "comprehensive absence data in the form of an individual record card for every employee" (p. 83). We would add that standardization in recording these data is also to be sought.

Time lost and frequency are widely used measures of absenteeism, so there is nothing innovative about the use of these measures. Short-term absenteeism, however, is not so widely used, and these researchers are to be commended for suggesting this as a measure of voluntary absenteeism. Given their social exchange perspective, it is understandable that the researchers are reluctant to provide means and standard deviations for their measures. Since they provide these statistics for each of the 21 organizations, however, it would have been consistent with the researchers' perspective to provide these statistics for the different types of organizations—clothing firms, foundaries, and so forth. Normative data of this type are very helpful to other researchers. Where the means and standard deviations are provided, it is not clear exactly how time lost, frequency, and short-term absences are computed, since the study identifies slightly different ways to compute these three measures. What we have done for this handbook is to identify the most general statement of each measure.

The measures suggested by these researchers use one year as the time interval for measuring absenteeism. They do not, however, address the problem created by turnovers and hirings during the year being studied. In particular, the employee who leaves or is hired in the middle of the year is likely to have fewer absences than the employee who is employed for the entire year. This problem requires that the amount of time on the payroll be used to standardize these measures. One way to do this would be to divide the number of months employed into the total number of absences, so as to produce a measure of average number of absences per month. Multiplying by 12 would then give the number of absences in the year.

The care devoted to the validation of voluntary absenteeism is commendable.

Source

Chadwick–Jones, J.K., N. Nicholson, and C. Brown. 1982. *The Social Psychology of Absenteeism* (New York: Praeger). Chadwick–Jones and his colleagues have published extensively in the area of absenteeism; this book cites many of their other publications.

ADDITIONAL MEASUREMENT SUGGESTIONS

Description

The study from which these two suggested questionnaire items come seeks to explain intent to leave an organization. A voluntary, short-term, general hospital in a large city of a midwestern state is the site of the study. All the employees of the hospital were surveyed, providing a sample of 1,400. Self-administered mail questionnaires were used to collect the data in the Fall of 1982.

Definition

Since the study examines turnover, little attention is devoted to defining absenteeism. The introduction to the two questionnaire items, as indicated below, defines absenteeism as missing "regularly scheduled work."

Data Collection

The following lead-in statement precedes two questions on absenteeism: "The following two questions ask you to remember the times you were absent from the hospital for regularly scheduled work in the last three months. 'Absent' means that you did not come to work when the hospital expected you. Do not count holidays, days that were canceled by the hospital, or any time that you scheduled off in advance (such as vacations and leaves of absence). Include all times, whether or not you were paid." The two absenteeism questions are as follows: "During the last three months, how many different times have you been absent from the hospital for regularly scheduled work? (One day equals one time absent; two or more consecutive days also equals one time absent.)" "This question concerns the absence(s) you indicated above. Of the times you were absent, how many of these absences lasted for a single day only? (Do not count those items when you were absent for two or more consecutive days.)"

The responses to the first question are the following: "No times missed of regularly scheduled work; One time missed of regularly scheduled work; Two times missed of regularly scheduled work; Three times missed of regularly scheduled work; Four or more times missed of regularly scheduled work." The following are the responses to the second question: "At no time did I miss a single, regularly scheduled work day; One time I missed a single day; Two times I missed a single day; Three times I missed a single day; Four or more times I missed a single day of regularly scheduled work."

Computation

The first question is a measure of frequency, whereas the second measures single days. The means and standard deviations for the two measures are, respectively, 1.72, 0.89 and 1.57, 0.77.

Validity

There is no explicit treatment of the validity of the measures, since the study is concerned with intent to leave. However, the distributions for the measures are provided and they are pertinent to validity:

Frequency	*Number*
No times missed	690
One time missed	486
Two times missed	153
Three times missed	39
Four or more	23
Missing data	9
Total	1400

Single Days	*Number*
None missed	774
One day	468
Two days	99
Three days	27
Four or more	10
Missing data	22
Total	1400

Although not firmly established, the distribution of absenteeism appears to be truncated and positively skewed, with the modal value being one time or one day absent (Hammer & Landau 1981). Both of the distributions are truncated and skewed, but the largest values are for zero and not for one.

Reliability

No data are provided about reliability.

Comments

A commendable feature of this study is the inclusion of managerial and professional employees in the sample. Most research on absenteeism ignores this type of employee, preferring instead to examine clerical and blue-collar workers (Steers and Rhodes 1978).

The definition of absenteeism corresponds exactly to the one we propose. Where there is likely to be respondent confusion about a concept, as is the case with absenteeism, validity of the questionnaire approach is probably enhanced by a brief introductory discussion, such as is provided for these two questions.

Some emphasizing, such as underlining, might have increased comprehension of the two questions. The "last three months" might have been underlined in the introductory comments; "different times" and "single day only" might also have been underlined in the first and second questions, respectively. Research will have to be conducted to ascertain the time period most appropriate for recalling the amount of absenteeism. Three months may be too long, with a month perhaps being more likely to result in reliable data.

The information about validity is ambiguous. Future research should compare questionnaire responses such as these two with records for the same individuals for the same period of time. Correspondence between the two measures would then provide data supporting the validity of the questionnaire items.

Internal consistency checks for reliability are not possible for single items, so test–retest procedures will have to be used in the future. Even this will not allow a straightforward interpretation, however, since the instability of the variable will be captured.

Source

Bavendam, J.M. 1985. The influence of organizational communication on intention to quit (unpublished Ph.D. dissertation, Univ. of Iowa).

NOTES

1. The Bureau of National Affairs, which collects a sizable amount of data about absenteeism, also views absenteeism as nonattendance at scheduled work (Miner 1977).

2. Despite the measurement problems, the voluntary–involuntary dichotomy is a widely used distinction. Social psychologists distinguish voluntary and reflexive (involuntary) behavior (Lawler 1973, pp. 2–3). Sociologists often distinguish social systems by whether membership in these systems is based on ascription or achievement (Merton 1957, p. 317). For example, membership in families is ascribed, whereas membership in work organizations is achieved. Ascription and achievement roughly correspond, respectively, to involuntary and voluntary. The turnover literature also uses the voluntary–involuntary typology (Price 1977, p. 9). For a legal contract to be valid, at least in Western countries, the contract must be entered into without coercion, that is, voluntarily (Granovetter 1974, p. 120). In criminal law, "intent" is basic—the doctrine of *mens rea*. The idea of intent is similar to that of voluntary behavior.

3. Turnover will be treated in Chapter 29.

4. Motivation will be treated in Chapter 19.

5. The work of Hill and Trist (1962) is an illustration of this Tavistock research. The idea of withdrawal from work is also frequently found in the work of scholars from the Survey Research Center of the University of Michigan (Indik 1965).

6. The following literature is relevant for the time-lost measure: Behrend (1959), Buzzard (1954), Covner and Smith (1951), Jones (1971, pp. 8–10), Vander Nout et al. (1958). For the frequency measure, see the following sources: Beehr and Gupta (1978), Breaugh (1981), Covner (1950), Hammer and Landau (1981), Huse and Taylor (1962), Johns (1978), Metzner and Mann (1953), and Patchen (1960). Material pertinent to measures of one-day or two-day absences, mostly the former, is found in the following publications: Behrend and Pocock (1976), Froggatt (1970), Gupta and Jenkins (1982), Martin (1971), and Pocock et al. (1972).

7. The 4,000 and 2,384 do not sum to 6,411 because data about sex were not obtained for 27 employees.

8. We have described the data as "apparently aggregated" because at other places in the book (pp. 19–23 and pp. 83–85) the researchers present variations of the three measures which use the organization as the unit of analysis.

9. Another measure, the Blue Monday Index, is also used in this validation. The Blue Money Index, however, is not as important as the Worst Day Index.

3

ADMINISTRATIVE INTENSITY

Definition

Administrative intensity is the extent to which an organization allocates resources to the management of its output.[1] Key management activities are making decisions, coordinating the work of others, and ensuring compliance with organizational directives. Management activities are contrasted with production activities, which involve direct work on an organization's output. Through their decision-making, coordinating, and controlling, managers are indirectly involved in producing the output of an organization. An organization with a high degree of administrative intensity is sometimes said to have a relatively large "administrative apparatus" or "supportive component." Administrative staff and production staff are common labels for administrative employees and production employees.

It is important not to identify specific occupations with the administrative staff. An accountant in a hospital will be part of the administrative staff, whereas the same accountant employed in an accounting firm will be part of the production staff. Similarly, a professor in a university, when involved in teaching and research, is part of the production staff; the same individual, when involved in managing an academic department, is part of the administrative staff.

Since appropriate administrative and production activities are essential for organizational effectiveness,[2] we have avoided referring to these activities as "overhead." It is true that productivity[3] is enhanced by low administrative intensity, and in this sense administration is overhead. Use of a negative term like overhead, however, detracts from recognition of appropriate administrative behavior as essential for organizational effectiveness; we agree with most scholars that the use of neutral terms is more consistent with the tenets of scientific investigation.

The term "intensity" is a fortunate choice of labels for discussing administration, because of its widespread usage concerning labor and capital. An organization is said to have a high degree of labor intensity when production of its output requires the use of a relatively large number of employees. A hospital is an example of such an organization. An organization is said to have a high degree of capital intensity when production of its output requires relatively heavy use of equipment. An oil refinery with continuous-process equipment is an example of an organization with high capital intensity.

Administrative intensity must be linked to the classic work of Weber.[4] The term "bureaucracy" in Weber's work corresponds to our "administrative staff." Most contemporary research refers to administrative staff rather than bureaucracy because it is very difficult to avoid the negative connotations associated with bureaucracy—again the scholarly preference for the more neutral label. Weber never intended the negative connotations that have developed. Although he never provided a general definition of bureaucracy, Weber did provide a description of various types of bureaucracy. The most common type referred to in the literature is the rational variant of bureaucracy, with its hierarchy of offices, clear specification of duties, and so forth.

What we have done in this handbook is to treat the most commonly used components of the rational type of bureaucracy as separate concepts. The hierarchy of offices is captured by our "centralization" and the clear specification of duties is treated as "formalization." In other words, rather than using the single rational concept of bureaucracy, we have used the components, such as centralization and formalization, that are widely studied in the area of organizational research. The work of Weber is thus important in the handbook, but does not appear as "bureaucracy" or "its rational variant" with all components specified.

Measurement

When this handbook was first published in 1972, Melman's *A/P* ratio was clearly the measure of administrative intensity most widely used in the literature.[5] The *A* and *P* in this ratio refer, respectively, to employees of the administrative staff and the production staff. In the 1970s a number of scholars (Child 1973; Freeman and Hannan 1975; Kasarda 1974) suggested separating the administrative staff into its components, such as administrators, professionals, and clerks.[6] The undifferentiated ratio is believed to be misleading. An increase in size may, for example, reduce the number of administrators but increase the number of clerks. The different direction of these changes will not be indicated by an undifferentiated ratio such as Melman proposed. Currently there is almost no use of an undifferentiated concept of administration to measure administrative intensity, and the two measurement selections, Blau and Schoenherr (1971) and Blau (1973), embody this current practice.

The first edition of this handbook viewed "span of control" as a separate concept. Partly because of the important measurement work of Van de Ven and Ferry (1980, pp. 288–295), we now see that the span of control is one way to measure administrative intensity.[7] The selection by Blau and Schoenherr also adopts this conceptualization.

Most measures of administrative intensity rely on data based on "occupations." Melman's *A/P* ratio is an example, as are all uses of differentiated concepts of administration. The members of the administrative staff are, in the final analysis, identified by their occupational labels, such as administrators, professionals, and clerks. The use of occupational data has two serious weaknesses, however. First, as Ouchi and Dowling (1974) have indicated, administrators are sometimes involved directly in producing the organization's output. For instance, nursing unit supervisors in hospitals, while mostly engaged in administrative activities, sometimes provide direct patient care. To classify all administrators as administrative staff employees results in an overestimation of the amount of organizational resources allocated to management activities. Second, occupational labels are sometimes misleading regarding the content of work. "Coordinators" in some hospitals are an example. Some coordinators, such as those involved in various types of education, are performing administrative activities, whereas other coordinators, such as those involved in disease control, are performing activities very closely associated with direct patient care. To classify all coordinators as members of the administrative staff is to overestimate the amount of hospital resources allocated to management activities. Four of the five measures used in two measurement selections (the exception is the staff ratio in the first selection) use data based on occupations. Care must be exercised in interpreting all such measures, especially if the studies are large and the researchers do not have time to examine carefully each occupation included in the study.

Historically, most measurement of organizational properties has been based on questionnaires, and as discussed in the introductory chapter, one purpose of this handbook is to encourage greater use of records. Administrative intensity is nearly always measured on data from records; no items based on questionnaires or interviews could be found. The staff ratio used by Blau and Schoenherr (1971) does indicate generally how such items could be constructed. Researchers should explore the possibility of measuring administrative intensity with items based on questionnaires and interviews; the exploration would, of course, require careful assessment of validity and reliability.[8]

"Definitional dependency" is a widely discussed topic in treatments of administrative intensity, as it is for other ratio variables. Freeman and Kronenfeld (1973) define definitional dependency as bias in the relationship between two variables that have common components. For example, if the relationship between organizational size and administrative ratio is systematically distorted or biased, then a definitional dependency exists.

There now exists a fairly large literature on definitional dependency. Papers that view negatively the use of ratio variables, and particularly ratio correlations, include Freeman and Kronenfeld (1973), Fuguitt and Lieberson (1974), and Schuessler (1973, 1974). More recent papers are less critical and even identify circumstances in which such variables can and should be used (Bollen and Ward 1979; Kasarda and Nolan 1979; MacMillan and Daft 1979, 1984). Some recent articles, which rely mainly on computer simulations, report that the definitional dependency issue is dead (MacMillan and Daft 1984; Feinberg and Trotta 1984a, 1984b). These authors conclude that there is no inherent bias or systematic distortion associated with using ratio variables.

Even with this more positive view of ratio variables, two issues that have been identified should serve as cautions to those who utilize ratio variables in their research. The first of these concerns measurement error. Feinberg and Trotta (1984a) have shown that measurement error will lead to different inferences depending on which particular measures and analytical techniques are used. The second issue concerns whether the data fit the assumptions associated with the analytical technique being used. The problem is that the data for any given study do not meet the assumptions of all of the techniques. This means that the results from various techniques may be different simply because assumptions may be met for one and not for the other. These problems lead to inconsistencies in the inferences across studies, measures, and techniques.

The implications for research using ratio variables are as follows. Studies using different analytical techniques should not be directly compared, nor should studies using different measures. Finally, a recent paper by Feinberg and Trotta (1984b) concluded by arguing that no single statement can be made about some artificial effect. Ratio correlations must be judged by whether the ratios are warranted conceptually, theoretically, and statistically.

BLAU AND SCHOENHERR (1971)

Description

The purpose of this study was to begin development of a theory with the organization as the unit of analysis. A limited set of formal characteristics, based on the work of Weber, were used to initiate construction of this theory. Prominent among these characteristics are size, complexity, relative magnitude of the administrative component, centralization, and mechanization. This focus on formal characteristics means, of course, that informal features of organizations and the social psychology of individual employees are ignored.

The site for this study was state employment security agencies in the United States.[9] Payment of unemployment insurance benefits and provision of public employment services are the responsibilities of these agencies. Fifty-three state agencies having 1,201 local offices and 387 major functional divisions located in the central headquarters were examined. Three units of analysis were used in the study: the entire agency, the local offices, and the functional divisions. Because of its focus on formal characteristics of organizations, samples of employees were not used in the analysis.[10] Instead, most of the data for the study were collected in 1966 by interviews with key executives.

Definition

Administration is defined (p. 82) as "the management of an organization's internal affairs," as distinguished from "production" of the "organization's output." A major goal of the study was to explain the relative magnitude of the administrative component of the state employment security agencies. This explanation constitutes part of the theory this study sought to develop.

Data Collection

Data for the measurement of the relative magnitude of the administrative component came from records. The first and second measures described in the next section were based on organization charts (about 3,000 were used), examples of which are reproduced in Blau and Schoenherr's Appendix D (pp. 395–407). The third measure was based on "time distribution reports" kept by all personnel (p. 87). In these reports, the employees estimated the amount of time they spend on different types of activities.

Computation

Three measures of the relative magnitude of the administrative component were used: the supervisory ratio, the span of control, and the staff ratio.[11] These measures were used for each of the three units of analysis—the entire agency, local offices, and functional divisions. To simplify the presentation here, the measures will be discussed only for the entire agency. Slight variations of the three measures were used for the other units of analysis.

The supervisory ratio is the sum of all supervisory personnel, divided by the total number of personnel (p. 375). "Agency" for this measure means the central headquarters of the organization. Supervisors are "heads of organizational subunits who have line authority over those employees who report to them."[12] The total number of personnel, the denominator, only refers to full-time employees (p. 381). The mean and standard deviation for the supervisory ratio are, respectively 21.2 and 4.55 (p. 375).

As for supervisory ratio, for span of control "agency" means the central headquarters.[13] Two calculations are used for the span of control, one for the director and one for the division heads (p. 375). The director's span of control is the sum of all division heads, special assistants, and supervisors of divisional offices (subunits with two to four members). The division heads' span of control is the sum of all supervisory and nonsupervisory personnel who report directly to the division heads, divided by the number of divisions. The means and standard deviations for the directors and division heads are, respectively, 10.2, 2.91; and 6.2, 1.30 (p. 375).

The staff ratio is the number of hours devoted to staff activities divided by the total number of hours worked by the agency.[14] "Agency" for this measure means the entire state organization rather than the central headquarters. The "time distribution reports" have a category entitled "administrative, staff, and technical" activities. Supervisory and building maintenance activities are excluded from this category to obtain the amount of time devoted to staff activities. In short, staff activities are a residual category. The mean and standard deviation for this measure are 10.7 and 2.80, respectively (p. 375).

Validity

No explicit data for validity are provided. There is some evidence for construct validity, since the researchers find that increased size decreases the relative magnitude of the component of the organization devoted to administration.

Reliability

The researchers provide no data about reliability.

Comments

This study, plus the next selection by Blau, are the two major works on administrative intensity conducted during the 1970s; all subsequent research on this topic must take these two studies into account. One appealing feature of this study is its evaluation of the theoretical propositions for the three units of analysis: the entire agency, the local offices, and the functional divisions. Support across different units of analysis strengthens the case for the propositions. Unfortunately, however, the researchers are not always consistent about the meaning of these units. Consider the three measures. Each is described as applying to the entire agency. This application should, given the focus of the study, include the entire state agency (the local offices and the central headquarters, which includes the functional divisions). This is not the case, however. The central headquarters is the unit of analysis for the supervisory ratio and the span of control, whereas the entire state agency is the unit for the staff ratio. This lack of consistency is confusing. Measures that are purported to refer to the entire agency should have this reference; the central headquarters does not, of course, constitute the entire agency.

To appreciate its significance this study must be placed in historical context. Organizational research in the 1930s, 40s, and 50s mostly focused on case studies. This focus, while ideal for generation of ideas, does not permit rigorous testing of propositions. Case studies illustrate rather than test propositions. In the late 1950s and early 1960s, however, three groups of researchers began to significantly expand the sizes of their samples—Woodward (1965) and the Aston Group (Pugh and Hickson 1976; Pugh and Hinings 1976) in England and Blau and his colleagues in the United States. The size of the Blau and Schoenherr sample (51 agencies, 1,201 local offices, 387 functional divisions) is literally beyond the comprehension of early organizational scholars and represents a major step forward in the study of organizations.

The relative magnitude of the administrative component is equivalent to our definition of administrative intensity. It would have been desirable for the researchers to have used the term "administrative intensity," but since this label was not used as extensively then as it is today, their not using it is understandable.

The researchers are very careful in their use of organizational charts, stating that these charts "are a valuable source of research data, *if*, and *only if*, they have been explained and verified by an informant who is familiar with the current operations of the organization" (p. 400, italics in original). This description of the instruments of data collection is clearly incomplete. The charts are indicated as the source of data for computation of the supervisory ratio and the span of control. Both of these measures require information on the number of employees allocated to different positions, and charts never, in our experience, provide this type of data. The researchers must have used other sources to provide these numbers. In fact, these other sources are identified in the researchers' discussions of complexity and size;[15] it would have been easier for the reader if location of this data had been clearly explicated when the measures of administrative intensity were described.

The "time distribution reports," which provided the data for the staff ratio, are interesting. Our guess is that most organizations will not have this type of record available, so the staff ratio, as calculated, will not generally be obtainable. Researchers, however, might collect this information themselves, by diaries, questionnaires, or interviews.[16] Our preference, if it can be arranged, is for some type of employee diary; we are uneasy about the estimation of time spent in different activities based on questionnaires and interviews. The advantage of this type of information is that it avoids the problems of occupationally based data, as identified in the general measurement discussion at the start of the chapter. Careful research is, of course, needed to check the validity and reliability of measures based on this type of information, especially if questionnaires and interviews are used.

A final comment about data collection is pertinent. Most organizational measurement is based on data collected by questionnaires and interviews. One purpose of this handbook, as indicated in the introductory chapter, is to encourage greater reliance on records as a source of data. Blau and Shoenherr make imaginative use of records for most of their measures and are to be commended for this. Only the Aston researchers are as resourceful as Blau and Schoenherr in the use of records.

It is unfortunate that more researchers have not followed the leads of Blau and Aston in this regard.

The researchers do not discuss the issue of "definitional dependency," because this issue was raised after their book was published. For the supervisory ratio, it is not clear why part-time employees were excluded from the computation. Such employees certainly create communication and coordination problems for the supervisors, concerns that occupy Blau and Schoenherr at several points in their study.[17]

The span of control measure does not seem to possess much validity as a measure of administrative intensity. For instance, both administrative and production employees may report to a single supervisor, a situation that is especially likely to occur for first-line supervisors. The span of control, as calculated, ignores these differences, thereby incompletely indicating the degree of administrative intensity. It is not clear why numbers of staff personnel are not used to calculate the staff ratio. Such numbers are used to compute the supervisory ratio and could also have been used for the staff ratio. "Staff," as defined, is a residual term; it is what is left after supervisory and maintenance activities are subtracted from "administrative, staff, and maintenance" activities. The reader can guess at the content of this residual activity—the work of accountants and lawyers would certainly be included—but such guesses should not be necessary. Staff activities should be illustrated and discussed.

The lack of explicit concern with validity and reliability is a major weakness of this research. What is presented as theory, however, is a genuine contribution to the study of organizations, as are certain features of the methodology, such as the extensive use of records and the estimation of propositions by means of multiple regression analysis.

Source

Blau, P.M., and R.A. Schoenherr. 1971. *The Structure of Organizations* (New York: Basic Books).[18]

BLAU (1973)

Description

This study examined how the organization of an academic enterprise affects work, that is, "how the administrative structure established to organize the many students and faculty members in a university or college influences academic pursuits" (p. 8). In more popular terms, the issue posed refers to the relationship between bureaucracy and scholarship.

Data were collected on 115 universities and colleges and constituted a representive sample of all four-year organizations granting liberal arts degrees in the United States in 1964.[19] Junior colleges, teachers' colleges, and other specialized enterprises such as music schools and seminaries were excluded from the sample. A specific academic organization, not a university system, is defined as a case. This means that the University of California is not considered as a case, but its Berkeley campus is so considered. The data were collected in 1968. Additional information on individual faculty members in 114 of these universities and colleges was made available to Blau from a study conducted by Parsons and Platt (1973). Data were thus available about the academic organization as a unit and about the faculty members within these organizations. The academic organization was the unit of analysis. As in the other work by Blau, the influence of Weber is much in evidence.

Definition

Administration is defined as "responsibility for organizing . . . the work of others" (p. 265). Blau was most concerned with explaining the relative magnitude of the administrative component and how this component influences other features of universities and colleges, such as their centralization.

Data Collection

Data for measurement of the relative magnitude of the administrative component came from interviews with an assistant to the president in each university and college. These interviews appear to have yielded records from which the measures were constructed.

Computation

Two measures of the relative magnitude of the administrative component are used: the administration-to-faculty ratio and the clerical-to-faculty ratio (p. 287). The administration-to-faculty ratio is "the number of professional administrators divided by the total number of faculty." Included among the faculty are both full-time and part-time members. The clerical-to-faculty ratio is "the number of clerical and other support personnel divided by the total number of faculty" (p. 287). Secretaries are an example of clerical personnel.

Validity

No explicit treatment of validity is provided. There is some support for construct validity, however, since the findings about the impact of size and complexity on the relative magnitude of the administrative component in this study of universities and colleges (pp. 249–280) parallel the findings on this same topic reported in the preceding selection by Blau and Schoenherr (1971) on state employment security agencies.

Reliability

No information is provided about reliability.

Comments

Most of our comments about Blau and Schoenherr's (1971) purpose and site are pertinent here and need not be repeated. Blau's concern with explaining the relative magnitude of the administrative component, sometimes termed the "administrative apparatus," corresponds to our administrative intensity. As with the Blau and Schoenherr (1971) selection, measurement of administrative intensity is based on records. The use of records is commendable.

As is the custom with contemporary research on administrative intensity, Blau differentiates "administration" into components: professionals, administrators, and clerks. However, he does not provide much information about the content of these categories. With respect to the clerical ratio, for instance, only secretaries are cited as an illustration. Nor is the meaning of "other support personnel," which is part of clerical personnel, specified.[20] The meaning of these key terms is not obvious, and more detail should have been provided. Blau and Schoenherr's study of state employment security agencies (1971) refers to "staff" and "maintenance" components of administration; this study of academic organizations makes no reference to these components. The reader wonders why the staff and maintenance components are excluded; a rationale should have been given for this exclusion.

Span of control is used as a measure (p. 29), but not as an indicator of administrative intensity. Since it was a key measure of administrative intensity in the Blau and Schoenherr study (1971), a rationale for its exclusion should have been provided. Span of control does not appear to possess high validity as a measure of administrative intensity; Blau should have made this argument himself, if this is why span of control is not used. The administration-to-faculty ratio and the clerical-to-faculty ratio, since they are based on occupational data, are subject to the types of validity problems discussed in the general measurement section. Measurement problems of this type are not treated by Blau. Nor does Blau discuss the issue of "definitional dependency," probably because the topic was only beginning to be treated in scholarly journals when Blau's study was published. The failure to explicity treat issues of validity and reliability is a major weakness of this significant study.

Source

Blau, P.M. 1973. *The Organization of Academic Work* (New York: Wiley).[21]

NOTES

1. This definition is based on Blau (1973, p. 267), whereas the term "administrative intensity" comes from Pondy (1969).

2. Effectiveness will be treated in Chapter 13.

3. Productivity will be treated in Chapter 24.

4. The discussion of Weber is based on Albrow (1970).

5. A discussion of Melman's *A/P* ratio is contained in the Price *Handbook* (1972b, pp. 19–26). Granick's *The Red Executive* (1960) and *The European Executive* (1962, pp. 288–295) provide additional data using Melman's ratio. Granick was one of the scholars responsible for the wide use of this ratio.

6. Rushing (1966, 1967) even earlier suggested differentiating administration into its components.

7. The work of Ouchi and Dowling (1974) also treats span of control as a measure of administrative intensity and reinforces the conclusion we drew from the work of Van de Ven and Ferry (1980).

8. Diaries kept by employees would be even better than questionnaires and interviews, but because of the difficulty of collecting data by diaries, they are not likely to be widely used. The work of Ouchi and Dowling (1974) has also encouraged us to look beyond records for data to measure administrative intensity.

9. Some data are also provided about state government finance departments. For details, see Appendix I of the book (pp. 431–435).

10. Some data about individuals, provided by The Division of State Merit Systems of the Department of Health, Education, and Welfare, were used. See Appendix B (pp. 366–372) for additional information.

11. At first glance a fourth measure, the clerical ratio, appears to have been used; it is given as a measure of "administration" in Appendix C (p. 375), along with the supervisory ratio and the staff ratio. The researchers, however, clearly did not intend the clerical ratio to be a measure of administrative intensity (p. 83 and p. 92).

12. Blau and Schoenherr provide additional information about how supervisors are distinguished from nonsupervisors (p. 404).

13. The span of control is clearly intended as a measure of administrative intensity (p. 193 and p. 221), yet it does not appear as a measure of "administration" in Appendix C. In addition, span of control is discussed as a measure of the "shape of the pyramid" in Appendix C (pp. 374–375).

14. The staff ratio specified at this point (p. 83) is clearly an intended measure of administrative intensity (see also pp. 384–385), yet this specification appears to be different from the one in Appendix C (p. 375).

15. Complexity and size are treated in Chapters 8 and 27 of this handbook, respectively.

16. Observational procedures could also be used, but they would be very expensive.

17. Blau and Schoenherr did not, however, define and measure communication and coordination (pp. 82–92). These two concepts are treated in this handbook in Chapters 7 and 10, respectively.

18. The first edition of this handbook went to the publisher about the time Blau and Schoenherr's book was issued.

19. Additional information about the sample is found in Appendix A of Blau's book (pp. 281–284).

20. "Other support personnel" are not mentioned in the text (pp. 28–29) when the clerical–faculty ratio is discussed. The computation given for this ratio comes not from the text, but from Appendix B of Blau's book.

21. This study and the first edition of this handbook were probably at their respective publishers' at about the same time, so the handbook could not, unfortunately, make use of this study of universities and colleges.

4

AUTONOMY

Definition

Autonomy is the degree to which an organization has power with respect to its environment.[1] The typical government agency and business firm, to illustrate, differ greatly in their autonomy. External units, such as legislatures and budget bureaus, exercise substantial power over the government agency's decisions with respect to policy, budget, personnel, and purchasing. In the typical business firm, none of these decisions is made substantially by units external to the firm; the top executives generally determine the critical operations of the firm. Either implicitly or explicitly, autonomy is the focus of concern in organizational studies dealing with strategy, the exercise of political power over organizations in the society, the role of governing boards, and the vertical integration of business firms. The range of these topics illustrates the importance of autonomy in the study of organizations.

Discussions of autonomy raise the issue of how to distinguish the organization from its environment, the classic boundary question. The example above viewed legislatures and budget bureaus as part of the enviornment of a government agency, and implied in such a view is a criterion for determining the boundary of the government agency. Since the boundary question will also appear later in this handbook—in the discussions of ideology and size, for example—we must directly confront the issue.

We consider the boundary of an organization to be determined by the extent to which organizational norms and sanctions are officially applicable.[2] Individuals who are legitimately subject to organizational norms and sanctions are considered to be within the organization; they are, in other words, members of the organization. Employees are clearly members of the organization, because they are officially subject to a large number of organizational norms and sanctions. Students and patients in universities and hospitals, respectively, are obviously viewed as members using this criterion. Customers would not be viewed as members of a business firm, because they are officially subject to almost none of the firm's norms and sanctions. Physicians in the typical community hospital, although not employed by the hospital, would be considered as members, because their behavior is legitimately regulated in important ways by the hospital. Finally, we consider governing boards, commissions, and councils to be outside the boundary of an organization, because they are the source of norms and sanctions directed at the organizations.

The idea of power is central to autonomy and will be equally important in the examination of centralization. We must, therefore, be explicit concerning this key concept. Power, to us, is the production of intended effects by some persons on other persons.[3] Seven points require elaboration. First, basic to this definition is the production of effects. If a supervisor, for example, issues an order to an employee and the order is not obeyed, then the supervisor has no power, despite having the right to issue the order. Rights are important, as we will soon indicate in the discussion of legitimacy, but it is the production of effects which is critical. Second, *intended* effects are stressed.[4] Some discussions of power emphasize intent, whereas other discussions exclusively examine effects, whether intended or not. We prefer the idea of intended effects because it is somewhat more restricted in meaning and may thus be empirically more manageable, and also because it seems to capture what many scholars mean by power.

Third, emphasis on the production of effects is compatible with the idea of legitimacy, which is central in most discussions of power.[5] Individuals who produce intended effects may do so legitimately or illegitimately. It is important whether power is legitimate or illegitimate, the former typically being more stable than the latter. Following Weber, we consider authority to be legitimate power. Fourth, force may or may not be involved in the production of intended effects. Most of the time the power that is observed in organizations is not the result of force, so it would be unfortunate if power were equated with force. Fifth, face-to-face interaction also may or may not be involved in the exercise of power. Although power in organizations commonly appears in face-to-face interaction, there are numerous examples of power that is not the result of personal contact, but comes through directives issued higher in the hierarchy.[6] Sixth, we do not view power in zero-sum terms. That is, we do not assume that there is a limited amount of total power, such that if one person gains power another person must lose power. The power of an organization over its members can increase or decrease; it is not a fixed amount.[7] Seventh, intended effects can be either ideas or behavior. Although behavioral effects are commonly examined, organizations expend a great deal of effort trying to affect ideas of their members or of outsiders.

Measurement

The measurement of autonomy can be either global or dimensional. A global approach would be based on general data about an organization's power concerning its environment. The top executives of an organization might, for example, be asked in an interview to make a general assessment of the power that the organization has with respect to its environment. A dimensional approach, on the other hand, would examine power with respect to types of decisions. The top executives, to return to the previous illustration, might be asked to assess the power of the organization concerning its environment with respect to decisions about policy, budget, personnel, and purchasing. Since the handbook was first published in 1972, the dimensional approach to measurement has become more prominent. The selection for the measurement of autonomy, by Holdaway and his colleagues, illustrates this.

The measure offered by Holdaway and his colleagues is basically the one used in the 1972 edition of this handbook. Little research has been done that improves on the 1972 measure, and we can locate no better measure in the literature since 1972. Given the importance of autonomy in the study of organizations, this is not the preferred state of affairs. Scholars working in this area must make evaluations regarding the degree of organizational autonomy—the political units of the society, for instance, exercise or do not exercise some degree of power over the organizations they attempt to regulate—and in the absence of valid and reliable measures the evaluations will be made impressionistically. Impressions as to how much autonomy an organization has are acceptable in the early stages of a discipline or in exploring a new area, but such impressions must be superceded by systematic measurement if theory is ever to be developed and tested. In short, more measurement work is critically needed in the study of autonomy. The "additional measurement suggestions" section of this chapter is intended to encourage measurement work in this important area.

HOLDAWAY, NEWBERRY, HICKSON, AND HERON (1975)

Description

This study used the concepts, and a modified version of the procedures, associated with the Aston approach to study colleges (community, private, and agricultural) and technical institutes in two Canadian provinces (Alberta and British Columbia). The "Aston approach" refers to the research (Pugh et al. 1968) performed on 52 organizations in the 1960s at the University of Aston in Birmingham, England. The Aston research is one of the major pieces of organizational scholarship of the 1960s and its impact on the field has been profound. Since the original Aston research examined mostly business firms, the Holdaway et al. study of educational organizations provided an important check on the Aston concepts and procedures. The 23 colleges and technical institutes, which range in size from 38 to 639 employees, offered programs of postsecondary education that lasted one or two years.

Definition

Autonomy is defined as "the extent to which organizationally relevant decision-making authority is inside the organization. . ." (p. 42). To illustrate, the autonomy would be zero in the agricultural colleges and technical institutes, since they are government organizations and all decision-making authority pertinent to their operations is located in a government department outside the colleges and institutes.

Data Collection[8]

Principals and presidents of the colleges and technical institutes were asked, during one-hour interviews, "who has the authority to decide" 18 different decisions (pp. 57–58). Authority is defined as action that "can be taken on the decision even though the decision may be subject to routine later ratification." The 18 decisions are: supervisory establishment; appointment of supervisory staff from the organization; promotion of supervisory staff; salaries of supervisory staff; dismissal of a supervisor; selection of faculty members; determination of a new program or service; determination of the attendance area; fee structure; type and brand of equipment to be purchased; method of work to be used; allocation of work among available personnel; admission standards for students; what and how many welfare facilities are to be provided; spending unbudgeted or unallocated money on capital items; spending unbudgeted or unallocated money on revenue items; assignment of responsibility to paraprofessionals; creation of a new department. The presidents and principals were apparently asked to indicate, in a yes−no format, whether each of the 18 decisions was made inside their colleges or technical institutes. Inside for the agricultural colleges and technical institutes appears to have been defined for the respondents as below the level of the government departments; for the public colleges, inside was below their commissions, boards, and councils; for the private colleges, inside seems to have been defined as below the level of their private boards.

Computation[9]

Each of the 18 decisions was scored as one or zero. If a decision was made inside the organization, a "yes response" during the interview, the score was one. If a decision was made outside the organization, a "no response" during the interview, the score was zero. The higher the score, when the 18 items are summed, the greater the autonomy. The mean and standard deviation, respectively, for the 23 colleges and technical institutes are 9.13 and 3.92 (p. 44). The scores ranged from 3 to 17 (p. 44).

Validity

Two types of data help in assessing validity. First, the index was verified (p. 43) by an "item analysis of a scalogram type using Brogden's coefficient" (Brogden, 1949). The mean analysis score for autonomy was 0.79. A score of this magnitude, to the researchers, meant that a single dimension was being measured by the 18 autonomy items. This may be interpreted as evidence for convergent validity of the index. Second, construct validity is indicated because, as expected from the literature, the greater the "exposure to public accountability," the lower the autonomy (p. 53). The agricultural colleges and technical institutes, which had the most exposure to public accountability, had, respectively, scores of 4.0 and 6.3; the private colleges, which had the least exposure to public accountability, had a score of 15.3.

Reliability

No data are provided about reliability.

Comments

Holdaway and his colleagues are to be commended for applying the Aston approach to a different setting. We want our concepts and measures to be applicable across all types of organizations, and this study establishes more clearly the generality of the original Aston concepts and measures. Extensions of this type are badly needed in the study of organizations.

Although the terms are slightly different, the concept of autonomy used in this study is identical to the one we propose in the handbook. The researchers, however, do not explicitly confront the classic boundary question of how to distinguish an organization from its environment. We would agree with Holdaway and his colleagues that decisions made in the government department for the agricultural colleges and technical institutes are made "outside the organizations." Researchers must, however, directly confront the boundary question and explicitly indicate the criteria by which they locate a decision as inside or outside the organization.

The biggest problem with the instrument is the lack of information. Since sufficient information was not provided to replicate the procedures of Holdaway and his colleagues, we had to return to the abbreviated version of the original Aston interview schedule (Inkson et al. 1970), which was modified for this research. Even with this we are still not sure exactly how the data were collected. We understand, of course, how difficult it is to include in an article full information about the instruments of data collection.

Two minor criticisms are relevant regarding four of the 18 decisions. First, the meaning of "supervisory establishment" and "revenue items" is not clear. Supervisory establishment could mean, among other things, the number of supervisors, scope of supervisory duties, or the levels of authority. Since revenue items are contrasted with "capital items," the former probably refers to all noncapital expenditures. Second, to allow for precise interpretation, each decision should refer to a single decision. The tenth decision refers to "type and brand" and the fourteenth decision refers to "what and how many." These two decisions should be broken into four decisions to facilitate interpretation. In addition, the decisions were specifically designed for educational organizations and will have to be modified when other types of organizations are studied.[10]

Like the information about the instrument, the information about the scoring is seriously incomplete. Descriptive data on measures, such as mean, standard deviation, and range, should be included in all research reports.

The data provided by Brogden's coefficient indicates convergent validity, but there must remain a real concern with discriminant validity. The researchers demonstrate, by means of factor analysis, that formalization, standardization, centralization, and autonomy are clustered together under what they term "bureaucratic control" (p. 46).[11] This is a reasonable clustering, but it leaves unanswered the question of whether the 18 items composing the autonomy index would load only on the autonomy factor if the items for various measures were factor analyzed together.

We are impressed by the material about construct validity, which indicates that the educational organizations that had the greatest public accountability had the lowest autonomy. What is especially impressive is the range of issues covered by the 18 decisions; the researchers seem to have included every major type of organizational decision. We would be even more impressed if Holdaway and his colleagues had interviewed the top executives in the colleges and technical institutes. "Top executives," to us, would be the top two tiers of managers. The top tier (the chief executive officers and their assistants) have system-wide responsibilities, whereas the second tier would manage sectors of the organizations but still should have a good grasp of the entire organization. It is our experience that chief executive officers, the presidents and principals in the study, commonly lack understanding about the *internal* operations of the organizations they direct, since their concern is usually with *external* affairs. We are thus suspect of data about internal operations provided by the chief executive officers. The presidents and principals might be knowledgeable about autonomy, since it refers to the relationship between the organization and its environment. More serious problems arise, however, in situations where the presidents and principals were requested to describe decision-making within the colleges and technical institutes, as they were in the measurement of centralization. The researchers are clearly aware of the problems in collecting all their data from the chief executive officers and sought to check the validity of these reports (p. 51), but more research must be conducted to assess the validity of data obtained from top officers.

We cannot assess the reliability of the index for autonomy, since the researchers did not provide the necessary data.

Source

Holdaway, E.A., J.F. Newberry, D.J. Hickson, and R.P. Heron. 1975. Dimensions of organizations in complex societies: The education sector, *Admin. Sci. Quart.* 20:37–58.

ADDITIONAL MEASUREMENT SUGGESTIONS

As indicated in the introductory chapter, many view questionnaires and interviews as providing subjective data, whereas observations and records provide objective data. Although we are especially interested in encouraging the use of objective data, subjective data will also be discussed here because some obvious data-collecting possibilities seem, to us, to have been ignored in the measurement of autonomy.

Consider subjective data first. Top executives could be asked, either globally or dimensionally, to assess the power that their organizations exercise with respect to their environment. A global question might be: "To what extent is your organization free, with respect to the environment, to determine its course of action?" The usual five or seven responses could be provided for the executives. There probably is no reason to define and illustrate the environment, because the executives will in all likelihood view the environment in a way that is consistent with the scholarly view.[12] A dimensional approach could use the same type of question, but focus on different types of resources. As an example, a question about financial resources might be: "to what extent is your organization free, with respect to the environment, to determine its budget?" Other resources would be land, labor, physical plant, and machinery. As far as we can ascertain, no one has used this direct approach to collect data to measure autonomy.

Let us now be more precise in defining top executives. In the Holdaway selection, we indicated that the top executives comprise the two highest tiers of the authority structure. The governing board is of course excluded, since we consider them to be part of the environment.[13] The top executives often have administrative assistants who have worked with them for many years and who are well informed about the relationships between the organizations and their environments. These assistants must be questioned. In brief, we mean top executives and their assistants.[14]

Records and observations are particularly useful in collecting data about autonomy. Two features of the situation concerning autonomy must be kept in mind when using records and observations. First, the critical behavior takes place in a relatively small arena, namely the interaction between a few top executives of the organization and a relatively small number of external bodies. The use of records and observations is the time-consuming process, so their use is facilitated by the relatively small arena where the critical behavior takes place. Second, most of the behavior that is important is formal rather than informal. An example is the formal interaction between a government agency and its regulation by legislative bodies and budget bureaus.[15] It is easier to record and observe formal behavior than informal behavior, so again records and observations are particularly useful. Since objective data are not readily available for many of our key concepts, researchers should take advantage of its availability for the concept of autonomy.

NOTES

1. This definition of autonomy is based on the work of Selznick (1953, pp. 29–37). Major studies of autonomy have been conducted by Selznick and his colleagues. Van de Ven and Ferry (1980, p. 307) also use this definition.

2. This criterion is advanced by Pfeffer and Salanick, as reported in Scott's discussion (1981, pp. 180–181) of this topic. Etzioni (1961, pp. 16–21) and Merton (1968, pp. 338–342) have helpful discussions of the boundary question. Barnard appears to have first addressed this topic explicitly, in his classic work (1938) on executives. Empirical work on the boundary question is not extensive.

3. This definition is based on the work of Wrong (1970, p. 41 and p. 55). There is an immense literature on power, and no useful purpose is served by citing even the major work in this tradition. Excellent reviews of the literature are provided by Bacharach and Lawler (1980) and Pfeffer (1981).

4. The following sources stress intended effects: Goldhammer and Shils (1939); Tannenbaum (1966, p. 84); Wrong (1970, p. 41 and p. 55).

5. Legitimacy is a central concern in Weber's important work on power (Bendix 1960, pp. 289–459).

6. Stewart Clegg first impressed upon Price, in informal discussions, the importance of indirect forms of power in organizations, when Price was a visiting professor at the University of Bradford, Bradford, England. Since then Clegg has published (1975) a major work on power.

7. Discussions of the "amount of power" in the literature describing the control graph approach to the measurement of centralization illustrate the idea that power is not a zero-sum concept. Markham (1984) has a helpful discussion of the control graph.

8. Information for the instrument reported in this section comes from the shortened version of the original Aston research (Inkson et al. 1970), which was modified for the Canadian study.

9. Most of the information about the computations comes from the shortened version of the original Aston research (Inkson et al. 1970).

10. A brief historical point may be pertinent. As noted and applauded earlier, central to the Aston approach has been an emphasis on records, or "objective" data sources. It should also be noted that the Aston approach, here and in the original research, makes use of interviews, often called "subjective" data sources. In short, the Aston approach relies on both objective and subjective data.

11. Formalization, standardization, and centralization are treated in chapters 14, 28, and 5, respectively, of this handbook. Structural concepts such as these three were influenced in the original Aston research by the work of Weber.

12. This may not be true concerning governing boards, such as boards of directors and regents. Scholars commonly regard these boards as part of the environment, whereas executives may regard the boards as part of the organization.

13. Top executives of business firms commonly belong to the governing boards of their organizations. These executives would be questioned because of their executive roles rather than because of membership on the boards.

14. This point about assistants was not made earlier so as not to complicate the presentation.

15. We are aware that some of the critical behavior is informal. In the government, for example, politicians in the executive branch sometimes informally exercise restraint over executive agencies. The same situation, of course, exists outside the government. Our point is that *most* of what is critical concerning autonomy appears to be formal rather than informal. The study of autonomy is very different from the study of work-group cohesion, where all of the behavior is informal. Work-group cohesion will be examined in Chapter 30.

5

CENTRALIZATION (POWER STRATIFICATION)

Definition

Centralization is the degree to which power is differentially distributed within an organization (Hall, 1982, pp. 114–115). The maximum degree of centralization would exist if all the power in an organization were exercised by a single individual; the minimum degree of centralization would exist if all the members of the organization shared equally in the exercise of power. Most organizations, of course, fall somewhere between the maximum and minimum degrees of centralization. Pertinent material is contained in discussions of the following topics: participative management; hierarchy of authority; close–general supervision; monocratic–democratic authority; executive–colleague authority; unilateral–bilateral decision-making; devolution. The number of different labels is indicative of the importance of centralization to organizational scholars.[1]

Power is basic to Weber's material on bureaucracy (Albrow 1970). His different types of administrative staffs (bureaucracies in the popular literature) are based on different types of legitimate power, or authority. Centralization is implicit in Weber's discussion of the hierarchy of authority. Power was discussed in the chapter on autonomy.

The literature on social stratification has traditionally distinguished three dimensions: pay, prestige, and power.[2] As indicated by the title of the chapter, we consider centralization to be power stratification. Chapters 21 and 23, respectively, deal with pay and prestige stratification.

"Leadership" is an important topic in the study of organizations, but this handbook does not have a chapter devoted to this topic.[3] We treat the ideas dealt with in the leadership literature but do so under different labels. Using centralization as an illustration, a common concern in the leadership literature is the extent to which the leader is "democratic" or "authoritarian." One characteristic of the democratic leader is willingness to promote participation in decision-making; the greater the participation, the more democratic the leader.[4] Centralization is concerned precisely with participation in decision-making, but we label this concern "distribution of power." Other aspects of the leadership literature are treated elsewhere in this handbook, such as in Chapter 7, Communication. The point we wish to make is that it is difficult to use the measure developed in the leadership literature, primarily because these measures commonly gauge a variety of different concepts.[5] Each chapter of this handbook treats a single concept; to achieve that objective, certain concepts had to be separated into several more precise concepts.

Current research on centralization commonly focuses on its dimensions. Chandler's classic work (1962), for example, distinguishes between strategic and tactical decisions. Becker and Gordon (1966) distinguish among decisions concerning work activities, resource allocation, and coordination. Unlike research on satisfaction, where the dimensions are fairly well standardized, there is little standardization regarding the dimensions of centralization. Research very much needs to be conducted to identify and standardize dimensions of centralization. Chandler and Becker and Gordon have broken away from a global approach to centralization; other scholars must now extend their work.[6]

Measurement

The second and fourth selections embody a global approach to the measurement of centralization. One of the most important instruments published since this handbook was issued in 1972 is the Job Diagnostic Survey (JDS) developed by Hackman and Oldham (1975). In the second selection Griffin and his colleagues (1980) investigate an instrument, the Job Characteristics Inventory (JCI), designed to improve the 1971 version of the JDS. Clearly the control graph approach is the most widely used global approach to the measurement of centralization. This approach has been developed by Tannenbaum and his colleagues at The Survey Research

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Center of the University of Michigan, and is examined by Markham and his colleagues (1984) in the fourth selection. The first and third selections represent a dimensional approach to the measurement of centralization. The work by Dewar, Whetten, and Boje (1980), the first selection, examines the two dimensions of centralization that came out of the research by Hage and Aiken (1969). The third selection, by Holdaway and his colleagues (1975), represents the dimensional approach to centralization used in the original Aston research (Pugh et al. 1968) conducted in England in the 1960s. Although not widely used outside the Aston tradition, the dimensions used by Holdaway and his colleagues provide an alternative to the global approach of the JCI and the control graph.

DEWAR, WHETTEN, AND BOJE (1980)

Description

The purpose of this study was to examine the reliability and validity of the Aiken and Hage measures of centralization, formalization, and task routineness. Our interest is only with centralization. The analysis is based on the original Aiken and Hage data (1968) and more recent data collected by Whetten (1974). The Aiken and Hage data were collected in 1964, 1967, and 1970 from 16 social service organizations; Whetten's data were obtained in 1973 from 69 manpower organizations. The 16 Aiken and Hage organizations range in size from 24 to over 600 persons and represent welfare organizations that provide rehabilitation, psychiatric services, and assistance for the mentally retarded; ten are private, while the other six are either public or branches of public agencies. Data were collected from 520 staff members who met three criteria: all executive directors and department heads; in departments of less than ten members, one-half of the staff was selected randomly; and in departments of more than ten members, one-third of the staff was selected randomly. Nonsupervisory administrative and maintenance personnel were not included in the study. The organizations studied by Whetten are similar to the Aiken and Hage organizations, except the manpower organizations have shorter periods of contact with each client and do more client processing for other agencies than all but six of the social service organizations studied by Aiken and Hage.

Definition

Aiken and Hage's definition of centralization is the extent to which "power is distributed among social positions" (Hage and Aiken 1967, pp.

510–511; 1970, p. 38). They also identify two dimensions, differentiating between the concentration of decisions related to resource distribution or policy formulation and the concentration of decisions associated with the performance of tasks.

Data Collection

In both studies interviews were used to collect the data. Four questions were used to measure organizational decisions; the measure is called the "participation in decision making scale" (we will abbreviate this as the "participation index"). The four questions are: "How frequently do you usually participate in the decision to hire new staff? How frequently do you usually participate in decisions on the promotion of any of the professional staff? How frequently do you participate in decisions on the adoptions of new policies? How frequently do you participate in the decisions on adoptions of new programs?" (Dewar, Whetten, and Boje 1980, p. 122). There are five response categories for each question: never, seldom, sometimes, often, always.

Five statements were used to tap the concentration of decisions about tasks (we will call this the "authority hierarchy index"): "There can be little action taken here until a supervisor approves a decision; A person who wants to make his own decisions would be quickly discouraged here; Even small matters have to be referred to someone higher up for a final decision; I have to ask my boss before I do almost anything; Any decision I make has to have my boss' approval" (Dewar et al. 1980, p. 122). The response categories were: definitely false, false, true, definitely true.

Computation

Responses to the four participation items were scored on a scale from one to five, with one assigned to "never" and five to "always." A four-point scale was used for each of the authority hierarchy items, with one indicating "definitely false" and four indicating "definitely true." The mean score was then computed for each respondent for each of the two dimensions. Respondents were then classified by "social position" in the organization, and a mean for each dimension for each position was computed by aggregating the individual means for the respondents in each social position. A social position is defined by Aiken and Hage "by the level or stratum in the organization and the department or type of professional activity. For example, if an agency's professional staff consists of psychiatrists and social workers, each divided into two hierarchical levels, the agency has four social positions: supervisory psychiatrists, psychiatrists, supervisory social workers, and social workers. . ." (1968, p. 918). Finally, for each dimension, the means across the various positions in each organization were aggregated and a mean was computed to represent the organization.

Validity

Initially Aiken and Hage (1968) found some support for construct validity; they predicted that the number of joint programs (organizational independence) would be inversely related to centralization. They found this for the participation measure, but not for the authority hierarchy measure.

Dewar et al. assessed the convergent and discriminant validity of these measures by examining interitem and off-diagonal correlations. The interitem correlations, which serve as an indicator of discriminant validity, represent the median correlation between all of the items measuring the particular dimension. Across the four data sets these are 0.88, 0.85, 0.81, and 0.66 for the participation measure; they are 0.52, 0.86, 0.76, and 0.37 for the hierarchy measure (Dewar et al. 1980, p. 124). The off-diagonal correlations represent the median correlation between the items of one of the measures and all items measuring the other constructs or subconstructs. A low correlation is indicative of discriminant validity. The correlations for the participation measure are 0.42, 0.61, 0.45, and 0.22; the corresponding coefficients for the hierarchy measure are 0.30, 0.31, 0.32, and 0.20 (1980, p. 124).

Reliability

Cronbach Alphas for the participation measure for the three years of the Aiken and Hage data are 0.95, 0.92, and 0.93; for the Whetten data the alpha is 0.81. The corresponding alphas for the authority hierarchy measure are 0.79, 0.96, and 0.70 (Dewar et al. 1980, p. 124).

Comments

The work by Aiken and Hage represents one of the major contributions to the study of organizations in the 1960s, and this analysis by Dewar et al. of some of their measures represents a significant contribution to the meaurement literature. Dewar et al. do not, however, give the number of respondents in the organizations, nor do they identify the selection criteria for either study. The information we report about the Aiken and Hage study come from that study (1968). Detailed information about the Whetten study are said to be available in his not easily accessible dissertation (1974).

The definition of centralization is consistent with ours. The distinction between decisions about resource distribution/policy formulation and the performance of tasks, although not well developed, is an attempt to identify dimensions. The data-collection strategy, although not completely reported by Dewar et al., appears appropriate for the task.

Three points need to be made about the computational procedures. First, the scoring of the two dimensions is unfortunate. A high score on the participation measure indicates low centralization, whereas a high score on the authority hierarchy measure represents high centralization. Second, since no descriptive data on means and variances are presented, comparisons are not easily made. Third, although the unweighted aggregation procedure is not justified by the researchers either conceptually or empirically, there is no basis for suggesting it is inappropriate. The strategy of aggregating individual scores to arrive at organization or unit scores is customary. The data suggest high levels of both validity and reliability for the two measures. Unfortunately, we are not given enough information to assess whether the two measures actually measure distinct dimensions of centralization.

Source

Dewar, R.D., D.A. Whetten, and D. Boje. 1980. An examination of the reliability and validity of the Aiken and Hage scales of centralization, formalization, and task routineness. *Admin. Sci. Quart.* 25:120–128.

GRIFFIN, MOORHEAD, JOHNSON, AND CHONKO (1980)

Description

The purpose of this study is to investigate the validity and reliability of the Job Characteristics Inventory (JCI). Sims and his colleagues (1976) originally developed the JCI to measure perceived task characteristics; their development work is based on the 1971 version of the Job Diagnostic Survey (Hackman and Oldham 1975) and is intended to improve this important instrument. Four sites were used by Griffin and his colleagues in this investigation: a manufacturing plant, a department store, a general hospital, and a university. No information is provided about the occupations of the 171 employees in the manufacturing plant; the 168 employees in the department store were salespersons; 87 resident physicians were studied in the general hospital. The university sample consisted of 163 graduate students of business administration (MBA) who were enrolled part-time in night courses; the students were employed full-time by a variety of manufacturing, refining, service, and retail organizations. No information is included about the full-time occupations of the students. The *N* for the four sites is 589.

Definition

Four concepts, all based on the Job Diagnostic Survey (JDS), are assessed by the JCI: feedback, autonomy, identity, and variety. Autonomy is the concept pertinent to our concern with centralization, and it will be the focus in this chapter. Griffin and his colleagues do not define autonomy; however, the development work by Sims and his colleagues (1976, p. 197) defined autonomy as "the extent to which employees have a major say in scheduling their work, selecting the equipment they will use, and deciding on procedures to be followed."

Data Collection

The following six questionnaire items were used to collect data for the measurement of autonomy: "How much are you left on your own to do your own work?" "To what extent are you able to act independently of your supervisor in performing your job function?" "To what extent are you able to do your job independently of others?" "The freedom to do pretty much what I want on my job?" "The opportunity for independent thought and action?" "The control I have over the pace of my work."[7] The first three items were preceded by an introduction:[8] "The following questions are concerned with characteristics of your job. Please circle the appropriate number, indicating from 'very little' to 'very much.' " Five responses were provided for each of the first three items: very little, little, a moderate amount, much, and very much. The second three items were also preceded by an introduction: "Following are a number of statements describing job characteristics. Please indicate how much the characteristic is actually present in your job by circling the appropriate number, ranging from 'a minimum amount' to 'a maximum amount.' " Five responses were also provided for each of the second three items. Only three of these five responses were assigned labels, however: "a minimum amount" (the first response), "a moderate amount" (third response), and "a maximum amount" (fifth response).

Computation

Scores from one to five were assigned to the five responses. "Very little" and "a minimum amount" were scored as one, whereas "very much" and "a maximum amount" were scored as five. The six scores were apparently summed to provide a single score. Griffin and his colleagues do not provide means and standard deviations for the six summed items; the earlier development work by Sims and his colleagues (1976, p. 209), however, provides, for what appears to have been the final version of the instrument, a mean of 3.76 and a standard deviation of 0.67.

Validity

Two sets of data are important regarding validity. First, data from each of the four sites were subjected to a principal-component-factor analysis with oblique rotation. For each site, Griffin and his colleagues note (p. 775) that "the four factors were feedback, autonomy, identity, and variety." Second, data from the four sites were combined and factor-analyzed by the same procedure. The extent to which the four dimensions were reproduced across samples was determined by the calculation of "factor congruency coefficients" for each pair of samples. Griffin and his colleagues note (p. 776) that "of the 96 coefficients calculated, 82 exceed 0.90 and all others exceed 0.80." Coefficients could range from 1.00 (perfect congruency), through 0.0 (perfect absence of congruency), to −1.00 (perfect inverse congruency). Consistent with convergent and discriminant validity, the researchers concluded (p. 776) that "the four-factor solution appears to be highly congruent across diverse samples." Arguing differently, Aldag and his colleagues (1981, p. 425) concluded in an impressive review of the substantial literature about the JCI that the validity is mostly "questionable."[9] The Aldag review did not, however, include the research by Griffin and his colleagues.

Reliability

Griffin and his colleagues calculated Cronbach's Alpha for feedback, autonomy, identity, and variety and noted (p. 775) that "all estimates exceeded 0.80." They concluded (p. 775) that these results for internal consistency meet "the minimum requirements for basic research." Although the researchers do not report the actual alphas for each of the four dimensions, Sims and his colleagues in their development work (1976, p. 209) reported an alpha of 0.84 for autonomy. Aldag and his colleagues state (1981, p. 425) that the internal consistency of the JCI is "acceptable" but that information about test—retest reliability was "largely unknown."

Comments

One of the most encouraging trends since this handbook first appeared in 1972 is the growth of development work like that conducted by Sims and his colleagues, the initiation of measurement research of the type conducted by Griffin and his colleagues, and the existence of comprehensive reviews similar to the one conducted by Aldag and his colleagues. Research of this type is very much needed. A commendable feature of the measurement research by Griffin and his colleagues is their selection of diverse sites to examine the validity and reliability of the JCI. We want our measures to be generally applicable; achievement of this goal is facilitated by research on instruments in diverse sites.

Autonomy, as investigated by Griffin and his colleagues, is concerned with power regarding a job and is *not* the same as organizational power concerning the environment—the topic of Chapter 4—or the distribution of power within an organization, the topic of the present chapter. We include the JCI measure of autonomy in the handbook because of its relevance to centralization. If, for instance, one wishes to compare centralization in a set of organizations, the JCI measure of autonomy should be useful. Since high scores on autonomy mean more power concerning the job, this would indicate that organizations whose low-level employees score relatively high on autonomy would be less centralized than organizations whose low-level employees score relatively low on autonomy. Work needs to be done linking autonomy, as measured by the JCI, to centralization. Since the JCI measure of autonomy appears to be relevant to centralization, we would like to encourage work that seeks to do this linking. We are concerned with autonomy, not as a *perceived* task characteristic, but as an objective feature of the organization. Autonomy may be measured by perceptions, but our concern at this point is with the objective features rather than the perceptions.

Griffin and his colleagues omitted important data about their investigation. The instrument should have been reproduced, essential data from the factor analysis should have been included, internal consistency scores should have been provided for the four concepts investigated, and means and standard deviations should have been set forth. We understand, of course, the pressure exerted by journal editors on researchers to conserve space. The editors, in turn, face severe cost constraints. Something must be done to cope with this problem, however. The costs are real and cannot be avoided, but so are the needs of researchers for information to evaluate and replicate. This problem appears throughout this handbook and will be directly confronted in the last chapter, where a suggestion will be advanced.

We earlier reproduced a mean of 3.76 for what appears to have been the final version of the JCI. A mean of this magnitude is impossible to attain with a six-item index whose lowest score is one, unless some additional arithmetic manipulation is carried out. Apparently these researchers have divided the total score by the number of items. Such a conclusion is consistent with the mean of 3.72 that was reported for an earlier version of the JCI (Sims et al. 1976, p. 203).

Aldag and his colleagues believe (p. 428) that continued use of the JCI for theory building is "questionable." We do not share their total rejection of the JCI.[10] Two points are pertinent. First, reliability of the JCI, as assessed by coefficient alpha, is acceptable, and even Aldag and his colleagues concur with this assessment. Test−retest assessments are desirable and should ultimately be provided. In the meanwhile, however, the existence of acceptable alphas is enough to warrant further research on the JCI. As the JCI carefully sought to improve the JDS, so should other scholars carefully seek to improve the JCI.

Second, Aldag and his colleagues are most negative concerning the validity of the JCI. Their evidence is impressive, but does not include the research by Griffin and his colleagues who found (p. 777) that "task dimensionality as measured by the JCI is consistent and reproducible across different settings." In evaluating the JCI it is impossible to ignore the measurement work by Griffin and his colleagues. Again, we prefer more research on the JCI to outright rejection.

Source

Griffin, R.W., G. Moorhead, B.H. Johnson, L.B. Chonko. 1980. The empirical dimensionality of the Job Characteristics Inventory, *Academy Management J.* 23:772−777.

HOLDAWAY, NEWBERRY, HICKSON, AND HERON (1975)

Description

The basic descriptive information about this study of Canadian colleges and technical institutes was presented in the chapter on autonomy.

Definition

Centralization is defined (p. 42) as "the distribution of decision-making authority through the hierarchy." The researchers view both centralization and autonomy as concerned with "concentration of authority."

Data Collection

Respondents (the principals and presidents of the colleges and technical institutes) were asked "who has the authority to decide" for each of 18 different decisions. These 18 decisions are listed in the discussion of autonomy. Authority was also defined for the respondents. Apparently, the respondents were also in some way presented (p. 42) with the following hierarchy of authority: government department, board, president or principal, administration, faculty, committee, instructors. The respondents seem to have been requested (p. 42) to indicate at which of these levels each of the 18 decisions was made.

Computation

Each level of the hierarchy is assigned a score from one to six: A decision made at the level of the government department was scored as six; a decision by instructors was scored as one. The scores were summed to obtain a measure for centralization, with high scores indicating greater centralization. Five of the 18 decisions were eliminated because their Brogden coefficients were less than 0.40. The 13-item index has a mean score of 62.04, a standard deviation of 9.04, and a range of 49 to 78 (p. 44).

Validity

Two sets of data are relevant to validity. First, the centralization index was verified by item analysis of a scalogram type, using Brogden's coefficient

(1949). The mean item analysis score for centralization is 0.78 (Holdaway et al. 1975, p. 43) and can be interpreted as supporting convergent validity. Second, construct validity is indicated, since the agricultural colleges and technical institutes, which are controlled by a government department, are more centralized than are the public and private colleges, which are controlled by commissions, boards, or councils (p. 49).

Reliability

No data are provided about reliability.

Comments

The comments made regarding this study's measure of autonomy also apply to the measurement of centralization. Three additional comments are in order.

In defining centralization Holdaway and his colleagues refer to "decision-making authority," which is essentially the same as what we refer to as legitimate power. However, when the researchers assigned scores for centralization, the two highest scores were for "government department" (a score of six) and "board" (a score of five). This means that "hierarchy," and thus centralization, extends outside the colleges and technical institutes for Holdaway and his colleagues. To us, centralization only describes the distribution of power *within* an organization. Were we to use their dimensional approach to the measurement of centralization, we would allow only four levels in the hierarchy: president or principal, administration, faculty committee, and instructors.

The hierarchy of authority presented to the respondents was a six-category score that included "government department" and "board." The public and private colleges are controlled, not by a government department, but by commissions, boards, or councils. Similarly, the agricultural colleges and technical institutes are controlled by government departments and not by commissions, boards, or councils. Thus, the six-category scale never matches reality. The highest score assigned should have been five and not six. When the public and private colleges were being examined, the five should have been assigned to decisions being made at the level of the commission, board, or council. Similarly, when the agricultural colleges and technical institutes were being examined, the five should have been assigned to decisions being made at the level of the government department.

We previously indicated our approval of the dimensional approach

Holdaway and his colleagues used in the measurement of autonomy and centralization. Dimensions are commonly indentified for these concepts, especially for centralization, but no one, to our knowledge, has specified these dimensions as well as these researchers. More work must be done in constructing a list of dimensions that will be widely used, but these researchers have provided a solid foundation on which to build. A problem is that Holdaway and his colleagues used the same decisions for autonomy and centralization; the two concepts had 13 common decisions, and the two measures were correlated at −0.85. This raises a real concern about whether two distinct concepts were measured. Our recommendation is that the measures of autonomy and centralization not be used at the same time. This is a substantial weakness in the measures, since there will be many times when researchers will want to study both autonomy and centralization.

Source

Holdaway, E.A., J.F. Newberry, D.J. Hickson, and R.P. Heron. 1975. Dimensions of organizations in complex societies: The education sector, *Admin. Sci. Quart.* 20:37–58.

MARKHAM, BONJEAN, AND CORDER (1984)

Description

This study is concerned with the validity and reliability of the control graph approach to the measurement of centralization. Previous studies using the approach are reviewed and an empirical investigation of a federal agency responsible for law enforcement is reported. Six geographically separate offices of the agency, all in metropolitan areas in the Southwestern United States and ranging in size from 30 to 580 employees, were examined. Informal work groups are also studied. Although all the employees of the agency occupied white-collar jobs, these jobs represented the full range of white-collar work. The sample consisted of 748 employees and 55 supervisors.

These researchers actually examined the measurement of characteristics of the control graph at the work-unit level and the individual level. Since our concern is with unit or organizational characteristics, we report only their findings at that level.

Definition

Centralization is not defined explicitly. Tannenbaum's definition of control is used, however: "Any process by which a person or group of persons . . . intentionally affects what another person or group of persons will do" (1968 p. 205). Centralization is thus viewed implicitly as concentrated control.

Data Collection

A questionnaire item was used to collect data to measure the concentration of control: "In general, how much say or influence do you think each of the following persons has on what goes on in your office? Just place a check mark in the column which best describes the amount of influence each person has" (p. 270)." Six persons were listed vertically, whose influence was to be assessed:[12] "you and the other people in your office, your own supervisor, your branch chief, your division head, the district manager, and the regional office in Metro City and/or the national office in Washington." Five degrees of influence, arranged horizontally across the page, were provided for each person: "no influence at all, very little influence, some influence, quite a bit of influence, and a great deal of influence. (p. 270)"

Computation

The five responses were assigned numbers from zero, for "no influence at all," to four, for "a great deal of influence." Each respondent thus assigned an amount of influence, from the perspective of his or her own office, to each level in the hierarchy of authority. Six levels of authority were possible in the federal agency studied.

Two uses can be made of the values assigned. First, a graph can be constructed.[13] Since all of the employees in a unit—a district, division, or branch—assigned an amount of influence to each of the six levels of authority, the amounts for each level for all employees can be averaged and plotted on a graph, termed a "control graph." Consider the following hypothetical control graph in Figure 5.1 for all employees in the agency. The control graph would indicate a highly centralized agency, with the top of the hierarchy, the Washington Office, having a great deal of influence and the bottom of the hierarchy, You and Your Office, having no influence at all. The negative slope of the line indicates that control steadily declines from the top of the hierarchy to the bottom.

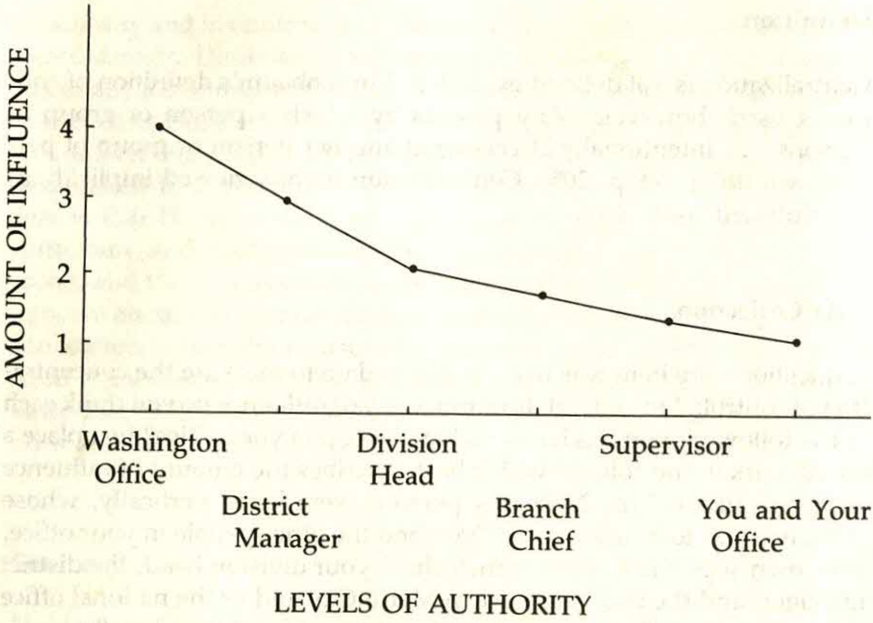

FIGURE 5.1 Hypothetical Control Graph

The second use of the assigned values is computation of a "slope" score.[14] In the above example, a slope score is computed by first averaging the responses to the two lowest levels (step 1), the two middle levels (step 2), and the two highest levels (step 3). The three averages in the above examples are, respectively, 0.75, 1.75, and 3.50. Next, averages are calculated for the means from steps one and two and steps two and three, which in the example would be the means of 0.75 and 1.75, and 1.75 and 3.50. The resulting scores are 1.25 and 2.63, respectively. Finally, the slope score is half the difference between these two means, which in the example is 0.70. The researchers present no descriptive data on these slope scores.

Validity

These researchers do not pursue the question of validity empirically, arguing that if a measure is not reliable (as they conclude), its validity cannot be assessed (p. 277).

Reliability

Because of the small number of branches and divisions, the researchers computed split-half reliability coefficients for work groups only. "The results," according to the researchers, are "not encouraging" (p. 273). All of the correlations are positive, but the scores range from "marginal" to "unacceptable." The highest coefficient is 0.39 for own and coworker control; it is the lowest, 0.18, for the slope measure (p. 274). In addition, when slope scores are examined by means of analysis of variance for the different units (divisions, branches, and work groups), the results show that, though the scores do discriminate to a limited extent, a high proportion of the variance is between members of a subunit, such as within a division, rather than between subunits, such as between divisions and branches.

Comments

Work on the control graph approach by Tannenbaum and his colleagues was begun in 1956, and a substantial literature has accumulated on the instrument. The same process of accumulation, of course, characterizes other major instruments, thereby presenting a researcher, or the authors of a handbook, with the difficult problem of locating and mastering this immense literature. This is the situation that makes the study by Markham and his colleagues such a welcome addition to the literature. Specialized studies, such as this one, make it possible for the study of organizations to progress; the researchers are to be commended for this type of work.

Centralization as concentrated control is equivalent to our view of centralization as the concentration of power. Tannenbaum's control corresponds exactly to our power.[15] The questionnaire item refers to "influence" rather than control, probably because influence would be clearer than control to most respondents. Influence also does not suffer the negative connotation of control. From our perspective power, control, and influence refer to the same idea, but we select the power label because it appears to be used more widely than the others to refer to the concept we have in mind.

The exact questionnaire item used by Markham and his colleagues is not used by all reasearchers using the control graph approach. In short, complete standardization is lacking. An item similar to this is generally used however. The levels of authority, of course, vary by the organization studied.

Mostly because they focus on their empirical study, Markham and his colleagues do not present much descriptive data from their questionnaire item. We thus had to construct a hypothetical example to clarify the measurement process. The ideal situation would have been two papers, one reviewing and criticizing the control graph approach and another reporting the results of the empirical study. A weakness of the slope score is that it is not directly comparable to a regression slope, which is the meaning most researchers assume when a slope is referred to. A second weakness is that this slope measure assumes a linear relationship. If linearity is not the true state of affairs, the slope score will be misleading. In addition, the score will vary as the number of levels of authority change. This variation makes means and standard deviations of the slope scores meaningless, thereby making it impossible to compare results across studies unless the organizations happen to have the same number of levels of authority. This inability to compare hinders the evaluation of theory.

Markham and his colleagues urge caution in the use of the control graph approach, and we concur in their assessment. In particular, their data rather clearly show that there exists considerable variation in the perception of centralization within the work unit. Top managers, for instance, perceive a much less centralized structure than the first-line supervisors and nonsupervisors. They conclude that the control graph questions tap mainly individual experiences with or perceptions of control (p. 283).

Two additional comments are necessary, however. First, use of and research on the control graph should continue. We are impressed by Tannenbaum and Cooke's argument (1979) that the control graph generally indicates quite centralized work organizations, a result that agrees with the impressions of most organizational scholars. Despite its problems, the control graph appears to be capable of accurately describing the power structure of the typical work organization. The approach should therefore not be discarded.[16] Second, we do not understand the lack of measurement work on the control graph approach by Tannenbaum and his colleagues. Use of the graph has been a critical feature of their work since 1956, and one would think that Tannenbaum and his colleagues would provide a wealth of measurement data about the validity and reliability of the graph. Such is not the case. They have continued to use the graph without inquiring deeply into its validity and reliability.

Source

Markham, W.T., C.M. Bonjean, and J. Corder. 1984. Measuring organizational control: The reliability and validity of the control graph approach, *Human Relations*. 37:263–294.

ADDITIONAL MEASUREMENT SUGGESTIONS

Superordinates vary in the extent to which they have immediate knowledge about the job performance of their subordinates. For some jobs, such as car salespersons, superordinates almost immediately have knowledge about the job performance of their subordinates as the result of open listing of sales in the agency. Athletes and their coaches work in similar situations, whereas elementary and high school teachers operate in very different situations, since principals or department heads (the superordinates) infrequently obtain detailed knowledge about the job performance of the teachers. Professional employees often work in situations similar to those of elementary and high school teachers. Our suggestion is that centralization can be measured by the amount of time between the execution of job activities and the knowledge of and evaluation of that performance by superordinates.[17] In particular, the greater the amount of time, the less the centralization. Organizations for which this time period is long for low-level employees are less centralized than organizations for which this time period is short for low-level employees.

If one accepts this measure, the issue of data collection arises. Observation, especially in larger organizations, would be too costly and can probably be ruled out as a viable option. Records, since their focus is so heavily on the formal structure, will probably not be too helpful, either. Employees, for instance, regularly undergo formal reviews of their work by their superordinates, and the results of these reviews will usually be on file in the organization. We do not wish to limit data collection to these formal reviews, since superordinates commonly have extensive informal ways to learn about the job performance of their subordinates. In short, records are in all likelihood not a valid indicator of the span of time that is of interest to us. Interviews and questionnaires will probably be the most efficient way to collect the requisite data. Organizational scholars have long been concerned with "close supervision" (Katz et al. 1950, pp. 16–37), and it is possible that questions from this research tradition can be used to measure the amount of time between job performance and the knowledge of this performance by a superordinate.

A comment is in order regarding the meaning of "superordinate." Professional employees generally do not like to use the term superordinate to refer to individuals who, in some way, are responsible for their behavior. Even less do professionals like to think of themselves as "subordinates." To us, for example, university department chairpersons and senior colleagues are "superordinates" if they have power regarding professional employees. Professional employees, in this instance, are subordinates. The label is not important; what is critical is the power. Organizations that employ sizable numbers of professional employees—such as universities, schools, hospitals, laboratories, and law firms—are typically fairly decentralized and are hesitant to use terms that signify the existence of power, such as "superordinate," "superior," "supervisor," and "subordinate." This hesitancy is probably a proper strategy to increase the effectiveness of professional organizations. To us, however, power by any other label continues to be power.

NOTES

1. We use "centralization" to refer to the distribution of power because of the widespread use of this label in the study of organizations. Only "participative management," or some other variant of participation, is used as widely as centralization. Centralization has a longer tradition in the literature than participation, a label that stems from the Human Relations Research of the 1930s. If possible, we prefer to maintain the traditional label to promote standardization of labels and measures.

2. The traditional labels here are class, status, and power (Mayer and Buckley, 1970), with Weber being the source. For social stratification, we mostly depart from tradition because organizational scholars are more familiar with pay and prestige than with class and status. The latter two terms are more common among sociologists; our intended audience is organizational scholars and their students, and such an audience extends considerably beyond the sociological community.

3. A helpful review of the most important measures of leadership is provided by Cook and his colleagues (1981).

4. We could, of course, equally well illustrate our point with the authoritarian leader.

5. This point is developed more fully in Price (1972b, pp. 193–194).

6. Moch's research (1976) uses the Becker and Gordon dimensions.

7. These six items come from the development work of Sims and his colleagues (1976).

8. The remaining information in this section was graciously supplied to us by Professor Sims.

9. The JDS was also included in this review.

10. Aldag and his colleagues also believe (p. 428) that continued use of the JDS in theory building is "questionable."

11. A helpful review of the JCI is also provided by Cook and his colleagues (1981, pp. 185–188).

12. We have left out two sentences that provided information peculiar to the agency studied. Exclusion of this information simplifies the presentation without the loss of any critical material.

13. The hypothetical example is used to clarify the construction of the control graph and the computation of the scope scores, because the researchers did not present graphs for the agency they studied.

14. Our presentation ignores material about "total control" yielded by the questionnaire item. The larger the amount of influence for each level of the hierarchy, the greater is the total control exercised by the organization. Our concern is with the slope of the line, not its height. The slope is what is indicative of the degree of centralization.

15. Power is discussed in Chapter 4 on autonomy.

16. What is especially needed is more research on the validity and reliability of the control graph approach in organizations with very different subunits. Some of the differences Markham and his colleagues failed to find (as they are aware) may be due to lack of variation across work units in the agency they studied.

17. We are not sure, but the idea for this measure may have come from literature dealing with the "time-span of discretions." See Price (1972b, pp. 55–57) for some citations of this literature.

6

COMMITMENT

Definition

Commitment is loyalty to the organization. A loyal employee identifies with an organization and is involved in being an employee of that organization. Porter and his colleagues (Mowday et al. 1982, pp. 26–28), who have worked extensively with commitment, suggest that the concept is characterized by three factors: acceptance of the organization's values; willingness to exert effort on behalf of the organization; and desire to remain an employee of the organization. Each of these factors, to us, characterizes a loyal employee, and it is more parsimonious to refer to loyalty than to the three factors. Although not defining commitment as loyalty, Porter and his colleagues use the term in their discussion (see, for example, Mowday et al. 1982, p. 19), and we argue that our view of commitment, as loyalty, is basically consistent with theirs.

Recent research refers to "attitudinal" commitment and "behavioral" commitment (O'Reilly and Caldwell 1981). Porter's three factors are in this research termed attitudinal commitment, whereas intent to behave in some way, such as continuing to be an employee of an organization, is termed behavioral commitment. Salancik's work (1977) is the source of the concern with behavioral commitment and has recently attracted considerable attention among organizational scholars (O'Reilly and Caldwell 1981; Pfeffer 1982, pp. 52, 190; Staw 1974, 1976). Since Porter's third factor, the desire to remain an employee of the organization, is identical to Salancik's behavioral commitment, we do not see Salancik's approach departing in any significant way from Porter's ideas of commitment.[1]

Commitment is an orientational concept as contrasted with structural characteristics of organizations. Orientational concepts have subjective referents, whereas structural concepts refer to patterns of interaction among employees. Orientations are invisible to an observer, whereas one can see the interactions that employees have with each other.[2] Motivation and satisfaction have traditionally been the major orientational concepts in the study of organizations. We define commitment, motivation, and satisfaction as different concepts.

Although to us loyalty has an orientational referent, it sometimes is used as a relational (structural) concept. An example would be an employee whose *behavior* places organizational concerns ahead of personal interests. This type of altruistic behavior is certainly part of what is traditionally meant by loyalty. Our referent, which is also in keeping with tradition, is orientational. A loyal employee identifies with and is involved in an organization.

Commitment should be related to the work on cosmopolitans and locals, since organizational loyalty is one component of the cosmopolitan–local distinction.[3] Cosmopolitans have a lesser degree of organizational loyalty than locals; that is, the cosmopolitans have less commitment than locals. Of course our concept of commitment does not capture all that is encompassed in the literature about cosmopolitans and locals—the dedication to specialized skills, for example, is excluded. The critical feature of loyalty is, however, caught up in our definition of commitment.

The object of loyalty in our conception of commitment is the organization. It is, of course, possible to be loyal to an occupation, such as a profession. An employee who is dedicated to a set of specialized skills, as discussed in the cosmopolitan–local literature, is committed to an occupation. Employees can also be committed to informal work groups in the organization; this type of commitment is treated in Chapter 30, on work-group cohesion.

Measurement

The first measure (Cammann et al. 1983, pp. 71–138) is an indicator of behavioral commitment and is part of the Michigan Organizational Assessment Questionnaire (MOAQ). Development work on the MOAQ has been performed by the Survey Research Center of the University of Michigan and probably represents the most sustained and important organizational measurement work on this concept in the 1970s.[4]

The second and third measures assess what those in the Salancik tradition term attitudinal commitment. The Cook and Wall (1980) selection, our second measure, builds upon the important work of Buchanan

(1974) and represents another example—Chadwick–Jones, Nicholson, and Brown (1982) on absenteeism was the first—of the solid measurement research performed in Sheffield, England by the MRC Social and Applied Psychology Unit. Since we basically use the concept of commitment proposed by Porter and his colleagues, it is appropriate that their measure also be used; it is our third measure. It has not always been the case in the study of organizations that researchers have both proposed a concept and developed a viable measure for the concept. We hope that other researchers will follow the example of Porter and his colleagues.

Our measures thus assume a single concept of commitment assessed in two somewhat different ways, the Cook–Wall–Porter way and the Salancik way. Since Salancik, in our view, does not really depart substantially from the Porter concept of commitment–Salancik's behavioral commitment is Porter's desire to remain an employee of the organization—it is possible that in the long run only the type of measure proposed by Cook, Wall, and Porter will be required. In short, the "intent" type of question from the MOAQ may not be needed. It is also possible, however, that two different concepts are involved. Only time and further research will tell. We include the three measures, rather than just using the measures of Cook, Wall, and Porter, to encourage this type of research.

CAMMANN, FICHMAN, JENKINS, AND KLESH (1983)

Description

The first measure is part of The Michigan Organization Assessment Questionnaire (MOAQ), whose development was begun in 1975 at the Survey Research Center of the University of Michigan. Providing information about the perceptions of organizational employees was the purpose of the MOAQ.

Eleven organizational sites were used in the development of this version of the MOAQ,[5] although all parts of the questionnaire were not used in all 11 sites. Each part of the report was based on more than 400 respondents drawn from not less than three organizations. No information was provided about the occupational composition of the respondents. The *N* for the 11 sites was 3,381.

Definition

"Intention to turn over" is defined as an "individual's desire to [not] continue to be an organization member" (p. 80).

Data Collection

Three items were used to collect data about intention to turn over. The first two were preceded by the statements, "Here are some statements about you and your job. How much do you agree or disagree with each?" The items are, "I will probably look for a new job in the next year," and "I often think about quitting." A seven-point response scale was provided for these two items: strongly disagree, disagree, slightly disagree, either agree nor disagree, slightly agree, agree, strongly agree. The third item was preceded by the statement, "Please answer the following questions." Item three is "How likely is it that you could find a job with another employer with about the same pay and benefits you now have?" A seven-point response scale was again provided, but only four scale points were labeled: (1) not at all likely, (3) somewhat likely, (5) quite likely, and (7) extremely likely.

Computation

The first two items were scored from one to seven, with "strongly disagree" scored as one and "strongly agree" scored as seven. The third item was also scored from one to seven, with "not at all likely" being one and "extremely likely" being seven. The three items were apparently summed into an index since correlation coefficients between intention to turn over and other variables were provided.

Validity

Three sets of data are pertinent to validity. First, when factor-analyzed with 11 general attitudes assessed by 30 questionnaire items, a single factor was obtained for the three items used to measure intention to turn over. The loadings for the three items were 0.79, 0.41, and 0.75, respectively (p. 84). One additional item, desire to transfer within the organization, also loaded 0.26 with this factor (p. 84). The factor analysis used the principal axis procedure with a varimax rotation on the factors selected with Kaiser's criterion (p. 76).[6] Second, as would be expected from the literature, intention to turn over was negatively related to job satisfaction (−0.58) and job involvement (−0.27) (p. 83). Third, when four dimensions of satisfaction—social rewards, intrinsic rewards, influence, and extrinsic rewards—were correlated with intention to turn over, the relationships were again, as expected, negative. The four coefficients were, respectively, −0.24, −0.45, −0.33, and −0.28 (p. 90).

Reliability

Cronbach's Alpha for the intention to turn over index is 0.83 (p. 83).

Comments

This study would have been improved had the researchers indicated the occupational distribution of their respondents within the 11 sites. The respondents undoubtedly represent diverse occupations, but this representativeness cannot be determined from the information provided. We are using the intention to turn over measure from the MOAQ to measure Salancik's behavior commitment, even though the MOAQ does not refer to behavioral commitment. Of the many measures of intention to turn over in the literature, the MOAQ is probably the best.

Information about the computations should have included data about how the three items were combined to form an index and the means and standard deviations for the three combined items. The third item, about finding a job with another employer, is typically used to measure the openness of the labor market; it factored with the first two items, however. The validity and reliability of the index are satisfactory, and the researchers are to be commended for their concern with assessing these.

Source

Cammann, C., M. Fichman, G.D. Jenkins, Jr., and J.R. Klesh. 1983. Assessing the attitudes and perceptions of organizational members, *Assessing Organizational Change*, ed. S.E. Seashore, E.E. Lawler, III, P.H. Mirvis, and C. Cammann (New York: Wiley), pp. 71–138.

COOK AND WALL (1980)

Description

This is a methodological study that simultaneously looks at measures of trust, commitment, and personal need nonfulfillment as related to the quality of working life. In particular, Cook and Wall needed brief measurement instruments for United Kingdom blue-collar employees. Two interview studies, with sample sizes of 390 and 260, were conducted with blue-collar employees. The samples were composed of full-time male employees in manufacturing industries; skilled, semiskilled, and unskilled levels were included. Both were nationally representative samples of England, Wales, and Scotland.

Definition

Cook and Wall begin with a discussion of a person's affective reactions to characteristics of the employing organization. Relying on Buchanan (1974), they view commitment as having three components: identification—pride in the organization and internalization of the organization's goals and values; involvement—psychological absorption in the activities of one's role; and loyalty—affection for and attachment to the organization, a sense of belongingness manifesting as "a wish to stay."

They say Porter et al. (1974) cover the first and third components, but disagree with Porter on the involvement component. Cook and Wall argue there is involvement in both the job role and the organization, whereas Porter et al. view job involvement only in behalf of the organization.

Data Collection

The instrument was administered in the respondents' homes by female interviewers as part of a larger survey. The order of the response categories was reversed for half of the respondents. The researchers say that self-administration has subsequently been used successfully. The first study was to identify the best-scaling three or four items. This was accomplished by dropping the items with the lowest item-total correlations. Three subscales consistent with the three conceptual components were develoepd. There was one negatively stated item for each of these, and each item had seven response categories: No, I strongly disagree; No, I disagree quite a lot; No, I disagree just a little; I'm not sure; Yes, I agree just a little; Yes, I agree quite a lot; Yes, I strongly agree.

The following statement preceded the items: "In this section we look at what it means to you being a member of your organization. Some people feel themselves to be just an employee, there to do a job of work, while others feel more personally involved in the organization they work for. The following items express what people might feel about themselves as members of their organization. Will you please indicate on this scale how much you agree or disagree with each statement in turn" (p. 51).

There were three identification items: I am quite proud to be able to tell people who it is I work for. I feel myself to be a part of the organization. I would not recommend a close friend to join our staff (−, to indicate a negatively worded item).

The three involvement items were: I'm not willing to put myself out just to help the organization (−). In my work I like to feel I am making some effort, not just for myself but for the organization as well. To know that my own work had made a contribution to the good of the organization would please me.

There were three loyalty items: I sometimes feel like leaving this employment for good (−). Even if the firm were not doing well financially, I would be reluctant to change to another employer. The offer of a bit more money with another employer would not seriously make me think of changing my job.

Computation

Scores from one to seven were assigned to the seven response categories in the order given above; the scoring was reversed for the negatively scored items. A simple unweighted sum of the scores for the nine items was used. The authors said all nine items can be combined, or the three subscales can be used separately. The normative data they present are based on the second study. Means for the combined commitment index, the identification component, the involvement component, and the loyalty component are, respectively, 45.4, 15.8, 16.6, and 13.0. The corresponding standard deviations are 9.6, 4.0, 3.1, and 4.5.

Validity

Cook and Wall used factor analysis with varimax rotation for the items designed to measure the three components. Commitment did come out as a separate factor (the nine items), but three of the commitment items also loaded on a third factor, identified as trust (two of these are identification factors). For Cook and Wall, this was evidence for convergent and discriminant validity.

Construct validity is alluded to when correlations with a number of demographic variables and other constructs are presented. This is not an exhaustive treatment, however, and the researchers are only willing to say the measures of the components are related in sensible ways.

Reliability

Cook and Wall give mean item-total correlations and alphas for the two studies, and test−retest correlations for the first study. Data for the subscales and for the combined measure are presented in Table 6-1.

TABLE 6.1 Reliability Data for Cook and Wall (1980) Measures

	Study				
	(1)			(2)	
Index	**Mean Item-Total *r***	**Alpha**	**Test–Retest *r***	**Mean Item-Total *r***	**Alpha**
Combined	0.64	0.87	0.50	0.50	0.80
Identification	0.57	0.74	0.60	0.54	0.71
Involvement	0.45	0.87	0.53	0.42	0.71
Loyalty	0.67	0.82	0.35	0.42	0.60

Comments

The applicability of the instruments to white-collar workers is unknown, since the study was designed to obtain a brief set of items for blue-collar workers.

We have dealt only with Cook and Wall's material on commitment; their material on motivation will be treated in another chapter. As discussed in the Introduction, our definition is more consistent with the work of Porter and his colleagues (Mowday et al. 1982, pp. 26–28). We are inclined to view involvement and commitment to the job role as distinct from commitment to the organization. Cook and Wall's conceptualization (pp. 40–41) relies on identifying an affective element and thus appears to be confounded with satisfaction. Finally, they clearly intend dimensions—identification, involvement, and loyalty—but they do not provide the conceptual basis for subsuming these dimensions under the general label of commitment.

We do not know how many items Cook and Wall began with, nor do we know the specific criteria used to eliminate items. Data are given only for the items that were retained. The researchers are to be commended, however, for including negatively worded items so as to avoid response sets. Their descriptive data for the total and the three components are helpful to those wishing normative data.

The factor analysis not only leaves some doubt about the uniqueness of commitment and trust, but it does not inform us regarding the three components of commitment. Except for perhaps some face validity, there is no empirical basis for claiming that the items differentiate three distinct components of commitment. More work is necessary before we would recommend using the three component measures. In addition, we would feel more positive about the discriminant validity of this measure had the researchers factor-analyzed the commitment item with the satisfaction items; the correlation between the two is 0.62 (p. 48). Although is variation across the components, the internal consistency and test–retest reliability data generally are favorable.

Source

Cook, J., and T. Wall. 1980. New work attitude measures of trust, organizational commitment and personal need nonfulfillment, *J. Occupational Psychol.* 53: 39–52.

MOWDAY AND STEERS (1979)

Description

The purpose of this paper is to summarize the research of Porter and his colleagues, which was specifically aimed at developing and validating a measure of employee commitment to work organizations. The instrument is called the Organizational Commitment Questionnaire (OCQ) and the results are based on research carried out over a nine-year period, which included 2563 employees from nine widely divergent work organizations. The job classifications that represent the nine organizations are: public employees, classified university employees, hospital employees, bank employees, telephone company employees, scientists and engineers, auto company managers, psychiatric technicians, and retail management trainees.

Definition

Commitment is defined as the relative strength of an individual's identification with and involvement in a particular organization (p. 226); commitment thus represents a state in which an individual identifies with a particular organization and its goals and wishes to maintain membership in order to facilitate these goals (p. 225). In particular, it is characterized by three factors: a strong belief in and acceptance of the organization's goals and values; a willingness to exert considerable effort on behalf of the organization; and a strong desire to maintain membership in the organization (p. 226).

Data Collection

A self-administered questionnaire of 15 items was used to capture the three factors. Six items were negatively phrased and reverse coded, and seven-point Likert scale response categories were used for all items. A nine-item short form can be derived, including only the positively worded items.

The following statement preceded the 15 items: "Listed below are a series of statements that represent possible feelings that individuals might have about the company or organization for which they work. With respect to your own feelings about the particular organization for which you are now working (company name) please indicate the degree of your agreement or disagreement with each statement by checking one of the seven alternatives below each statement" (p. 228).

The 15 statements are listed below (an R indicates a negatively phrased and reverse-scored item):

1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.
2. I talk up this organization to my friends as a great organization to work for.
3. I feel very little loyalty to this organization. (R)
4. I would accept almost any type of job assignment in order to keep working for this organization.
5. I find that my values and the organization's values are very similar.
6. I am proud to tell others that I am part of this organization.
7. I could just as well be working for a different organization as long as the type of work was similar. (R)
8. This organization really inspires the very best in me in the way of job performance.
9. It would take very little change in my present circumstances to cause me to leave this organization. (R)
10. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.
11. There's not too much to be gained by sticking with this organization indefinitely. (R)
12. Often, I find it difficult to agree with this organization's policies on important matters relating to its employees. (R)
13. I really care about the fate of this organization.
14. For me this is the best of all possible organizations for which to work.
15. Deciding to work for this organization was a definite mistake on my part. (R)

The seven response categories were: strongly disagree, moderately disagree, slightly disagree, neither disagree nor agree, slightly agree, moderately agree, strongly agree.

Computation

The response categories as given above were scored as one through seven, with one given to strongly disagree and seven given to strongly agree; these were, of course, reversed for the negatively stated items. The scores for all 15 items were summed and divided by 15. Across the nine samples, the mean ranged from 4.0 to 6.1, and the standard deviation ranged from 0.90 to 1.30.

Validity

Expressing concern with convergent validity, the authors argue that the OCQ should be related to other measures designed to capture similar "affective" responses. Across six samples the median *r* was 0.70 when the OCQ was correlated with the Sources of Organizational Attachment (SOA) measure. This is a 12-item measure of perceived influence of various aspects of the job, work environment, and organization on the individual's desire to remain with or leave the organization. The correlation with a single intent-to-leave measure ranged from −0.31 to −0.63. The correlations with motivational force to perform and intrinsic motivation ranged from 0.35 to 0.45. The correlation with central life interest (orientation to work and nonwork activities) ranged from 0.39 to 0.43. Finally, the supervisor's rating of the employee's commitment correlated at 0.60 with the OCQ.

With regard to discriminant validity, the authors argue that the OCQ should not be highly correlated with other attitudinal measures. Over four samples the correlation with job involvement ranged from 0.39 to 0.56; the correlation with career satisfaction for two samples was 0.39 and 0.40; over five samples the correlation with the JDI (job satisfaction) ranges from 0.01 to 0.68 with a median of 0.41.

With respect to predictive validity, theory says committed employees will be less likely to leave; across nine studies, eight correlations were significantly negative. Commitment was also found to be lowly negatively correlated with absenteeism, positively correlated with tenure, and positively correlated with job performance.

Reliability

Cronbach's Alpha ranged from 0.82 to 0.93 with a median of 0.90. For six samples item analysis was used to obtain the item-total correlations, which ranged from 0.36 to 0.72. Factor analysis with varimax rotation was conducted on the 15 items for each of six samples; the authors report that these generally resulted in a single-factor solution. Test–retest reliability coefficients were computed for two samples. Among psychiatric technicians the correlations were 0.53, 0.63, and 0.75 for two-month, three-month, and four-month periods. Among retail management trainees, the correlations were 0.72 for two months and 0.62 for three months.

Comments

The value of this type of paper cannot be overemphasized. Advances in measurement can be best facilitated when researchers take the time and care to review and report on measurement data. There has been substantial growth in measurement work since this handbook was first published in 1972, and this paper is representative of such work. Mowday and Steers distinguish between behavioral and attitudinal commitment, as we do, but they are primarily interested in attitudinal commitment. Their third dimension, desire to maintain membership, is clearly a behavioral component as emphasized by Salancik. The primary difference when compared with our conceptualization is that we use the label "loyalty" and Mowday and Steers do not. In addition, there is some ambiguity in their work regarding the conceptual distinction between commitment and satisfaction. They intend them to be distinct, but rely on terms like "affective" when discussing commitment (pp. 226, 234). Satisfaction, but not commitment, is usually conceptualized as having an affective component.

Provision of a short form is a real plus, since space on a questionnaire is always at a premium. Care should be taken in using this shortened version, however, since the use of all-positive statements may result in some response set bias. The descriptive data on means and standard deviations are useful as normative data.

The data suggest that this index is a relatively reliable one; the test–retest correlations were not terribly high, but of course this type of measure is contaminated by actual changes in the variable being measured. The authors' distinction between convergent and predictive validity is perhaps open to debate, but since the correlations are supposed to be high in both instances, there is no reason to pursue this. Their correlations in the discussion of discriminant validity seem low enough to say there is some evidence for discriminant validity, but high enough to say the evidence is not clear cut. They admit to this and we agree. The major problem in this validity assessment is that the researchers did not factor-analyze these items with items designed to measure other concepts. In short, discriminant validity is not adequately assessed.

Source

Mowday, R., and R. M. Steers. 1979. The measurement of organizational commitment, *J. Vocational Behavior* 14: 224–247.

NOTES

1. Salancik (1977) seems to view commitment very differently from Porter and his colleagues. However, in work in the Salancik tradition, such as the important research by O'Reilly and Caldwell (1981), Salancik's view does not seem to differ from the view of Porter and his colleagues. What is critical are O'Reilly and Caldwell's measures of commitment; they refer to commitment as "attachment," as do Porter and his colleagues, and suggest the Porter measure *and* the intent measures. The O'Reilly and Caldwell measures are, in effect, what we propose in this handbook.

2. These remarks, it should be emphasized, also apply to behavioral commitment. The referent for behavioral commitment is *intent* to behave in some way—such as leaving the employment of an organization—rather than the actual behavior. Behavioral commitment is a somewhat misleading label.

3. This material on cosmopolitans and locals is based on the review of the literature and empirical study by Flango and Brumbaugh (1974).

4. We have also benefitted from Bluedorn's (1982) work on intent to leave.

5. The eleven sites, plus the *N* at each site, are listed on p. 79 of the report cited. Two previous versions of the MOAQ have been published.

6. Additional information about the factor analysis is provided on p. 76. The factor analysis appears to have been performed (pp. 78–79) on data from at least four of the eleven sites ($N > 400$).

7

COMMUNICATION

Definition

Communication is the degree to which information is transmitted among the members of an organization.[1] This transmission of information assumes many forms in organizations: formal discussions between superordinates and subordinates, informal conferences among subordinates, publication of various types of newsletters, production of radio and television programs, posting of announcements on bulletin boards, the use of public address systems, and so forth. Socialization, feedback, role ambiguity, role clarity, acculturation, assimilation, diffusion, indoctrination, and education are some of the many labels under which communication is discussed.

Four dimensions of communication are distinguished. The first, and probably the most common distinction, is between formal and informal communication. The basis of this distinction is whether the information is transmitted officially or unofficially. Formal communication refers to officially transmitted information. The sanctions at the disposal of the organization—its wealth and prestige, for example—are used to support the system of formal communication. The system of informal communication receives no such support. Second, vertical and horizontal communication are commonly distinguished. Vertical communication refers to the transmission of information in superordinate–subordinate relationships, whether from superordinate to subordinate or from subordinate to superordinate. Horizontal communication refers to transmission of information among peers.

Third, personal and impersonal communication, while not discussed explicitly in organizational literature as often as the two previous distinctions, is implicit in much of the literature. The basis of this distinction is whether or not the information is transmitted in situations where mutual influence is possible. Personal conversations and telephone calls are examples of personal communication, while the mass media is an example of impersonal communication. Fourth, instrumental and expressive communication may be distinguished. The transmission of information necessary to do a job is instrumental communication, whereas expressive communication is the residual category of nonjob information. Like personal and impersonal communication, the meaning of instrumental and expressive communication is usually implicit in the literature; both terms identify significant components of communication, however, and they should be explicitly distinguished.

Measurement

Communication is one of the most commonly treated topics in the organizational literature. Not only do all the textbooks allocate a sizable amount of space to its discussion but it also is a key feature of major empirical studies. Popular literature is also enamored with the possibility of communication as a panacea for whatever ails an organization. If one is to judge by the amount of space allocated, communication is one of the most significant topics in the organizational literature.

The measurement of communication is a neglected topic, however. Despite the neglect, there are some measures we can recommend. The first selection, by Breaugh (1980), examines three widely used measures of role ambiguity that, it will be argued, can be used to measure communication. Role ambiguity is an important kind of employee stress, as are role conflict and role overload.[2] From the seminal work by Kahn and his colleagues (Kahn et al. 1964), "stress" has been strongly emphasized by organizational scholars. Two of the major practitioners of measurement work on communication are O'Reilly and Roberts. The second selection (1976) is an example of their work.[3]

Finally, we have set forth suggestions for two additional measures of communication, plus some indication as to how data for these measures can be collected. We are particularly interested in measures based on objective data, and one of the suggested measures is based on this type of data, namely records.

The introductory section distinguished four dimensions of communication: formal–informal, vertical–horizontal, personal–impersonal, and instrumental–expressive. As will be indicated when the selections are described, the measures capture mostly formal, vertically downward, personal, instrumental communication. Measures of the excluded dimensions are needed.

BREAUGH (1980)

Description

This study examines the psychometric properties of the three most commonly used measures of role ambiguity (Beehr 1976; Lyons 1971; and Rizzo et al. 1970). Participants in the study represented a cross section of the workers in the production department of a large midwestern organization. The *N* for the study was 101.

Definition

Breaugh does not define role ambiguity. The work by Rizzo and his colleagues (1970, p. 156), however, the most widely cited research on the topic, defines role ambiguity in terms of certainty, clarity, and predictability. Certainty is important with respect to "duties, authority, allocation of time, and relationships with others"; clarity concerns "the existence of guides, directives, [and] policies"; predictability is relevant with regard to "sanctions as outcomes of behavior." Breaugh's work is consistent with this definition.

Data Collection

Breaugh's study describes three measures of role ambiguity. The Beehr (1976) measure uses the following lead-in question and set of four questionnaire items: "How true is this of *your* job? I can predict what others will expect of me tomorrow; I am clear on what others expect of me on my job; On my job, whatever situation arises, there are procedures for handling it; I get enough facts and information to work my best." All of the items except the third (On my job . . .) are taken from the Quality of Employment Survey (Quinn and Shepard 1974) conducted by the Survey Research Center of the University of Michigan. Four responses were provided for each of the questionnaire items: very true, somewhat true, a little true, and not true at all.[4]

The Lyons measure of role ambiguity (1971), termed the Role Clarity Index by Lyons (p. 104), asks each respondent four questions: "How clear are you about the limits of your authority in your present job? Do you feel you are always as clear as you would like to be about *how* you are supposed to do things on this job? Do you feel you are always as clear as you would like to be about *what* you have to do on this job? In general, how clearly defined are the policies and the various rules and regulations of the hospital that affect your job." The response pattern for the four questionnaire items uses the following basic format: very clear, quite clear, fairly clear, not too clear, and not at all clear.[5] Lyons provides no lead-in statement for his four items.

The measure of role ambiguity used by Rizzo and his colleagues (1970) contains six questionnaire items: "I feel certain about how much authority I have; There are clear, planned goals and objectives for my job; I know that I have divided my time properly; I know what my responsibilities are; I know exactly what is expected of me; Explanation is clear of what has to be done." Seven responses are provided for each of the six items; the responses range from "very true" to "very false." No information is provided about a lead-in question for the six questionnaire items or about the five intermediate responses to each item.

Computation

The four questionnaire items of Beehr's index appear to have been scored from one to four, with "not true at all" being scored as one and "very true" being scored as four. A single score seems to have been obtained by adding the items. The higher the score, the greater the role ambiguity. Breaugh provides no descriptive statistics; Beehr (p. 36) reports a mean of 1.92 and a standard deviation of 0.64.

The four questions in Lyon's index appear to have been scored from one to five, with "not at all clear" being scored as one and "very clear" being scored as five. The four items are apparently summed to provide a single score. The higher the score, the greater the clarity of the role. Ambiguity, of course, is the inverse of clarity. Neither Breaugh nor Lyons provides descriptive statistics for this index.[6]

Responses to the index by Rizzo and his colleagues were apparently scored from one to seven. "Very false" was probably scored as seven and "very true" as one. An index score appears to have been obtained by summing the six questionnaire items. The higher the score, the greater the ambiguity. Breaugh provides no descriptive statistics; for the two samples they studied, Rizzo and his colleagues (p. 158) report means of 3.79 and 4.03 and standard deviations of 1.08 and 1.15.

Validity

Breaugh provides four sets of data regarding the validity of the three measures of role ambiguity. First he ascertained the degree to which the three measures are intercorrelated. He then assessed the degree of variance shared by different combinations of the three measures. The percentage of shared variance are as follows: Beehr/Lyons, 28; Beehr/Rizzo et al., 45; Lyons/Rizzo et al., 40. "The percentage of shared variance between the role ambiguity measures was not impressive," according to Breaugh (p. 587).

Second, Breaugh examined five dependent variables that past research had indicated were associated with role ambiguity: work satisfaction, supervisory satisfaction, job-induced tension, absenteeism, and performance. Most of the correlations were in the predicted directions, with the majority being statistically significant. With the exception of supervisory satisfaction (−0.43, −0.41, and −0.40 for the three measures of role ambiguity), the correlations were "only modest in size" (p. 587).

Third, Breaugh used a principal axis factor analysis on the 14 items making up the three measures. As expected, a single factor was found, with the mean loading being 0.62; no item loaded less than 0.37 (p. 587). Fourth, the 14 items comprising the three measures of role ambiguity were combined into a composite index, which was then compared to the five dependent variables of work satisfaction, supervisory satisfaction, job-induced tension, absenteeism, and performance. Although in the same magnitude, the correlations between the composite index and the five dependent variables were mostly higher (11 of 18) than the correlations between the three separate measures of role ambiguity and the dependent variables.

Since the publication of Breaugh's research (1980), the index of role ambiguity proposed by Rizzo and his colleagues (1970) has been criticized by Tracy and Johnson (1981) and defended by House and his colleagues (1983).[7] Tracy and Johnson argue that the index of role ambiguity, because of its wording, measures both role clarity and feelings of comfort with the role. Their inspection of the factor loadings reported by Rizzo and his colleagues supports their argument. House and his colleagues, in an empirical study, examined the argument advanced by Tracy and Johnson[8] and concluded that this argument "may not be able to be substantiated and that modification of the index may not be necessary" (House et al. 1983, p. 334).

Reliability

Breaugh (p. 586) reports Cronbach Alphas of 0.66, 0.77, and 0.80, respectively, for the indices proposed by Beehr, Lyons, and Rizzo and his colleagues. The three indices possess "modest internal consistency," according to Breaugh (p. 587).

Comments

As we have indicated, the type of research reviewed here (Breaugh, Tracy and Jones, House et al.) has expanded since this handbook was first published in 1972 and promises to improve considerably the quality of measurement in the study of organizations. We can only applaud this type of research. Breaugh should, however, have provided more information about the type of organizations studied, the exact sizes of the organizations, and the occupational composition of the sample. Information like this is necessary if generalizability is to be assessed and if comparisons are to be made.

Measures of role ambiguity are not typically viewed as indicative of the transmission of information; we thus must justify our decision to measure communication with indices of role ambiguity. If the employees of an organization are certain and clear about the content of their work roles,[9] then the organization has been successful in transmitting information to its employees. A major goal of the communication structure of an organization is to inform the employees about their work roles, so certainty and clarity with respect to these roles among the employees is indicative of successful communication. We thus measure communication, not by the different means used to transmit information, but by the extent to which a major goal is achieved. In short, we measure communication indirectly, by examining its effects. The assumption is that success in transmitting information about work roles is indicative of organizational success in achieving other goals of the communication structure. This assumption is, of course, subject to empirical confirmation. The indices of role ambiguity, to return to the dimensions cited at the beginning of the chapter, focus on communication that is mostly formal, vertical, personal, and instrumental.

As the notes indicate, Breaugh's article excludes information necessary to replicate his research. Even the original research Breaugh reviewed does not always contain this essential information. The absence of information in reported research is a problem that we have previously noted and will encounter again.

Comments will now be made about each of the three sets of questionnaire items. Beehr's items, probably because they come from an interview schedule, have only four responses. Lyons's fourth item ("In general . . .) refers to "hospital." The site appropriate to the study should, of course, be substituted. The responses we have identified for Lyons's four items are different from those reported by Breaugh. We could not find Breaugh's reported responses in the research he reviewed (Lyons 1971); our reported responses come from Lyons's original research (1968, pp. 139–140). Breaugh reported seven responses for each of the questionnaire items used by Rizzo and his colleagues; only two of the responses are given, "very true" and "very false." The original source (Rizzo et al. 1970) also did not specify the five intermediate responses. Researchers should, to facilitate proper replication, specify all of their responses.

Essential computational information, such as scoring procedures and descriptive statistics (means and standard deviations), is omitted from Breaugh's study. Even the original research reviewed by Breaugh is deficient in the provision of essential computational information. One can understand the exclusion of lengthy instruments, such as questionnaires and interview schedules, from brief articles, but omission of computational information is unacceptable.

Three comments are pertinent to Breaugh's validity data. First, his results about construct validity would have been strenghtened had he used one of the standard measures of satisfaction, such as we provide elsewhere in this handbook. The Hackman and Oldham measure (1975) is not the best available.[10] Second, Breaugh measured absenteeism with "total number of days absent." Although the most widely used measure of absenteeism, this measure is strongly influenced by a small number of extreme values.[11] It would have been best to use one of the standard measures of voluntary absenteeism, such as frequency or single days absent. Third, the results for the factor analysis would have been more convincing had items representing other concepts been included. For example, an evaluation of discriminant validity would have been possible if Breaugh had performed a factor analysis on the three indices of role ambiguity *and* other classic stress concepts such as "role conflict" and "role overload."

Beehr's third questionnaire item (On my job. . .) appears to be a measure of standardization rather than communication.[12] This item has the lowest loading (0.37) of the 14 items in the factor analysis. The Quality of Employment Survey (Quinn and Shepard 1974), from which Beehr's other three items were taken, does not use the third item to measure role ambiguity.

Breaugh considers the three indices of role ambiguity as "somewhat equivalent," with no one measure being superior to the others (p. 587). His major conclusion is that researchers "should exercise caution in utilizing any of the role ambiguity" indices (p. 588). House and his colleagues are more positive, but still qualified in their assessment of the measure used by Rizzo and his colleagues. House et al. (1983, p. 337) believe that continued use of the index "may be warranted." The next step appears to be using the three indices Breaugh examined to construct a single, improved index. Such an index might upgrade Breaugh's cautious endorsement of the three indices and remove the qualifications that House and his colleagues included in their assessment of the Rizzo et al. instrument. One purpose of this handbook is to encourage this type of measurement research.

Finally, a major validity issue concerns our suggested use of a measure of role ambiguity to measure communication. This recommendation is premised on the assumption that the degree of role ambiguity is the direct consequence of the level of communication. Our suggestion is appropriate only if this assumption is correct. If the goal of research is to examine both role ambiguity and communication, then obviously an independent measure of communication would have to be used.

Source[13]

Breaugh, J.A. 1980. A comparative investigation of three measures of role ambiguity, *J. Appl. Psychol.* 65:584–589.

O'REILLY AND ROBERTS (1976)

Description

This study examines the relationships between source credibility and communication behavior in organizations. Source credibility is a subject of concern because it is the basis of trust in interpersonal relations. Safety, expertise, and dynamism are the three dimensions of source credibility considered. Seven communication behaviors were examined: perceived information accuracy, perceived communication openness, number of others contacted, frequency of contact, number of task contacts, number of social contacts, and amount of time spent in interaction. Respondents were employees in 20 private, general-care medical practices that ranged in size from 2 to 20 members. Questionnaires were returned by 110 subjects (a 90 percent response rate) representing all occupations in the medical practices except physicians.

Definition

Communication is defined as "information exchange" (p. 99). Accuracy and openness, the dimensions of concern, are not defined.

Data Collection[14]

A lead-in statement preceded the questionnaire items used to collect data for accuracy and openness: "The following statements may or may not be descriptive of communication in your group. Please read each statement and decide to what extent you feel the statement applies. DRAW A CIRCLE around *one* of the seven letters (A B C D E F G) following the item to show the extent to which you agree or disagree with the statement." The seven letters were then defined: A = strongly agree; B = moderately agree; C = slightly agree; D = neutral; E = slightly disagree; F = moderately disagree; G = strongly disagree. Data to measure accuracy and openness were collected by ten questionnaire items:

1. It is easy to talk openly to all members of this group.
2. The information I receive is often inaccurate.
3. I can think of a number of times when I received inaccurate information from others in this group.
4. Communication in this group is very open.
5. It is often necessary for me to go back and check the accuracy of the information I've received.
6. I sometimes feel that others don't understand the information they have received.
7. I find it enjoyable to talk to other members of this group.
8. The accuracy of information passed among members of the group could be improved.
9. When people talk to each other in this group, there is a great deal of understanding.
10. It is easy to ask advice from any member of this group.

Accuracy and openness were assessed by items 2, 3, 5, 6, and 8 and items 1, 4, 7, 9, and 10, respectively.

Calculation

No information is provided about scoring, means, or standard deviations.

Validity

Four sets of data are useful in assessing the validity of the indices of accuracy and openness. First, the ten questionnaire items were subjected to a principal-component-factor analysis with varimax rotation.[15] As expected, two orthogonal factors, corresponding to accuracy and openess, were obtained. Second, for the 20 medical practices, safety, expertise, and dynamism (the three dimensions of source credibility) are significantly and positively related to accuracy and openness. The Spearman rank-order correlations of the three dimensions with accuracy are 0.54, 0.33, and 0.45; for openness, the correlations are 0.67, 0.45, and 0.74 (p. 101). Based on past research, these findings are expected.

Third, for the 110 individuals in the sample, the three dimensions of source credibility are also significantly and positively related to accuracy and openness. The correlations of safety, expertise, and dynamism with accuracy are, respectively, 0.30, 0.22, and 0.34; for openness, the correlations are 0.20, 0.34, and 0.40 (pp. 100–101). The correlations are lower when individual employees are the unit of analysis. Fourth, accuracy and openness are, as expected, related to the communication behaviors examined (p. 101). For the medical practices, accuracy and openness are strongly associated in a positive manner with all communication behaviors except total time spent in interaction. For the individuals in the sample, both accuracy and openness are significantly and positively associated with the frequency and number of others contacted. Accuracy is also significantly and positively correlated with the number of task contacts. Accuracy is not, however, significantly related to social contacts and the amount of time spent in interaction; nor is openness significantly related to task contacts, social contacts, and total amount of time spent in interaction. Most of the relationships (13 out of 20), however, turned out as expected. O'Reilly and Roberts appear satisfied with the validity of the two indices.

Reliability

Cronbach Alphas of 0.78 and 0.85 are reported (p. 100) for accuracy and openness, respectively.[16]

Comments

As mentioned in the introductory comments, O'Reilly and Roberts are two of the few scholars doing measurement research on communication. Their study, given the importance of communication in the study of organizations, is extremely valuable. It is important, however, to know the occupational composition of the employees in the 20 medical practices; only physicians are referred to, in that they are excluded from the sample.

Four conceptual points are pertinent. First, O'Reilly and Roberts's exchange of information corresponds to our transmission of information; their study is thus consistent with our conceptualization. Second, accuracy and openness are not commonly used dimensions of communication. These concepts appear to be important, however, and they may in the long run be as significant as our four dimensions (formal–informal, vertical–horizontal, personal–impersonal, and instrumental–expressive). Third, the meanings of accuracy and openness may appear to be obvious, but the two concepts should have been explicitly defined and illustrated by the researchers. Fourth, O'Reilly and Roberts carefully refer to *perceived* accuracy and *perceived* openness. We are interested in communication as an objective feature of an organization and view employee perceptions as indicators of these objective features. At this point, employee perceptions per se are not our concern.

Two comments about the instrument used to collect data are appropriate. First, respondents were asked about communication in their "work group." There may be some difficulty in interpreting the meaning of work group, since the terms may refer to either the formal work unit or an informal grouping of employees. The researchers should initially indicate to the respondents their intended meaning for work group. Second, respondents were asked to indicate the extent of their agreement or disagreement by drawing a circle around one of seven letters (A through G). The letters accompany each of the questionnaire items. Major research organizations, such as the Survey Research Center (SRC) and the National Opinion Research Center (NORC), typically spell out the complete response patterns rather than use letters. The extra space required for the complete response patterns is obtained by using a five-point response set rather than a seven-point set. We know of no empirical data to support one strategy over the other, but find the more traditional strategy to be the clearest for respondents.

Two comments about the calculations are pertinent. First, provision of scoring information and descriptive statistics such as means and standard deviations should be routine in research studies, even brief research notes such as this one. The scoring can be inferred from current practice—strongly agree was probably scored as seven and strongly disagree was probably scored as one—but this cannot be checked if descriptive statistics are not provided.[17] Second, response-set bias is a potential problem with both indices. All of the items that collect information about accuracy are negatively worded, whereas the items concerned with openness are positively worded. To reduce the problem of response-set bias, researchers should use both positively and negatively worded items and distribute them randomly.

O'Reilly and Roberts present an impressive amount of data concerning the validity and reliability of the indices of accuracy and openness. While not without problems, as we have indicated, the indices certainly warrant further use and investigation. There is more to organizational communication than the exchange of information within work groups. Within-work-group communication, for example, ignores the exchange of information between work groups. It is our view, which will be elaborated under additional suggestions, that work-group communication is a valid indicator of organizational communication.

Source

O'Reilly, C.A. III, and K.H. Roberts. 1976. Relationships among components of credibility and communication behaviors in work units, *J. Appl. Psychol*. 1:99–102.

ADDITIONAL MEASUREMENT SUGGESTIONS

Immediate Work Units

The first suggestion is that selected features of immediate work units, when combined into an index, will provide a valid indicator of the communication structure of an organization. This section will define what is meant by immediate work unit, specify how an index might be constructed, and suggest how data might be collected for this index.

Considering the total organizational structure and the hierarchy of authority, the immediate work unit is the lowest-level formal unit to which an employee is assigned. The emergency room in a hospital, the sociology department in a university, the book department in a department store, the platoon in the infantry, a specific elementary school in an intermediate-size or small community, a specific fire station in city government, and the personnel department in a factory are all illustrations of immediate work units.

Formality is an important feature, because it indicates legitimacy from the perspective of the organization. Regular meetings of the employees of the emergency room, for example, mean that the hospital, at least implicity, approves the allocation of hospital resources for conducting the meetings. It is the communication structure of the hospital, to stay with this example, that is of concern. Informal work groups are important for organizational communication, but it is our belief that formal work units provide a more valid indicator of organizational communication than do informal work groups.

An immediate work unit always has a supervisor. Labels change from organization to organization, but someone is always responsible to higher authorities for the operation of the unit. This is a good place to remind the reader of a point made in the introductory chapter, namely that the concern of this handbook is with work organizations rather than with voluntary associations. Voluntary associations generally have democratic structures, at lease normatively, and thus do not have hierarchies of authority and supervisors.[18]

An immediate work unit often is a budget unit within the organization. When this occurs, financial records are maintained centrally for the unit, providing additional data for researchers to analyze and facilitating identification of the units within the organization.

The assignment of supervisors to immediate work units, for measurement purposes, poses some problems. First-line supervisors, for instance, commonly have regular meetings with the immediate work unit they supervise and with other supervisors. Both meetings have important implications for communications. To keep measurement reasonably simple, however, only one group, the immediate work unit, should enter into scoring. Intermediate supervisors pose a somewhat more complex problem. What, for instance, is the immediate work unit of a college dean? The college can be viewed as the dean's immediate work unit; as with the first-line supervisors and for the same reason, meetings of deans will be ignored.

The chief executive officer of the organization also poses a complex classification problem. One reasonable solution is to consider the entire organization to be the immediate work unit for the chief executive officer. The immediate work unit of the chief executive officer meets when the entire organization meets or its subunit representatives gather. Administrative staff, such as secretaries and assistants, assigned to the intermediate supervisors and the top executives should be classified like the supervisors and top executives.

Consider now construction of an index based on immediate work units. Six features of these units seem to be important for communication: whether or not there was a meeting of the unit during the preceding month; whether or not meetings of the unit, if they were held, were regularly scheduled; whether or not the meetings, again if they were held, lasted one-half hour or more; whether or not a majority of the members of the unit attended the meetings; whether or not there is a set place for the meetings; and whether or not supervisors talked less than one-half of the time during the meetings. Each of these criteria should be scored as one or zero, with a score of one meaning a positive response to the criterion. If a work unit never meets, then the unit will receive a zero score.

Our expectation is that high scores on the index will generally indicate high levels of communication within the units. Furthermore, and most important, high average scores across units in an organization will generally indicate high levels of organizational communication. In terms of our basic dimensions, presence of these features in immediate work units indicates communication that is formal, personal, and instrumental; high scores on the index should also indicate vertical communication and horizontal communication. There are, of course, other ways to construct an index based on selected features of immediate work units, and it is possible that this index might not capture all organizational communication. Transmission of information is a subtle process, and these rather crude features of the work units may miss much. An index of this type seems to be worthy of investigation, however.

Finally, consider how data may be collected for such as index. The information required for the proposed index will not be available in records. No set of records, for example, will indicate an approximate amount of time that the supervisors talked during the meetings. This is an important component of the index, since it provides a clue as to the direction of the communication. It is too costly, especially in larger organizations, to obtain the required data by means of observation. Too much detailed information is needed about too many work units. This leaves questionnaires and interviews, which seem to be the most reasonable means of data collection for the proposed index. Construction of specific questions seems to be unnecessary here, since the information needed to construct the index has been specified in some detail.

Education and Training

Our second suggestion is that expenditures for education and training, calculated as a percentage of total organizational expenditures, provide a valid indicator of the communication structure of an organization. This section will provide examples of what should be included in expenditures for education and training and indicate how data about these expenditures can be collected.

Expenditures in connection with the following activities are examples of what is meant by education and training: orientation sessions for new employees, in-service training programs for regular employees, employee attendance at training conferences outside the organization, development and maintenance of an organizational library, educational leaves, visiting speakers, and publications of in-house newsletters. Although some activities important for education and training may have been overlooked, enough examples have been provided to indicate the type of expenditure to be tabulated. There are difficulties in measuring these expenditures; some activities, such as orientation of new employees, for example, include many different kinds of expenditures.

Conspicuously absent among our examples are externally oriented activities, such as advertising and public relations. Our concern is with communication within the organization, and expenditures for the internally oriented activities specified seem a more valid indicator of this concern than advertising and public relations. In the final analysis, of course, this is an empirical issue, as is everything associated with these suggestions.

The percentage of money spent on education and training will in all likelihood vary considerably by industry. Organizations that produce high-technology products, for instance, probably spend proportionately more on education and training than organizations that produce low-technology products. In the long run, interpretation will be facilitated by constructing averages for different industries.

The validity of the proportion of expenditures for education and training as a measure of an organization's communication structure is certainly open to question. Such expenditures may, for instance, be a better indicator of innovation than of communication; the activities described seem also to characterize innovative organizations (Kanter, 1983). Such expenditures may, to consider a second instance of invalidity, be too narrowly oriented to present an accurate indication of the communication structure of an entire organization. Very important informal communication is, for example, not included in expenditures for education and training. Further research is needed to resolve questions like this.

Finally, consider data collection for this measure—records are clearly the appropriate source. Computation will be difficult, because the expenditures will be scattered among many different budget items and the items will not always specify exactly the purpose of education and training. Difficult though their use may be, records are clearly superior to interviews, questionnaires, and observations in this instance. Respondents have difficulty with even simple numbers in interview and questionnaire situations, and the types of numbers required for this measure are much beyond what could be expected in the survey setting. Observation seems clearly to be inappropriate. It is possible, of course, to observe the education and training activities specified. It would be very difficult to estimate the required percentage from observations, however, and why estimate when the data are available on records?

Organizations are sensitive about providing researchers access to certain kinds of records, such as the names and addresses of their employees. Records about expenditures for education and training, however, do not seem to fall within the category of sensitive records. The information should thus be fairly accessible.

We have suggested measuring communication indirectly, by examining its effects. If the employees of an organization, are, for example, uncertain and unclear about what they are supposed to do, then the structure of communication in the organization has not been successful in transmitting information. Our suggested focus on immediate work units and on education and training represent direct measures of the structure of communication. Immediate work units and education and training are the means of transmitting information, rather than effects of the process of communication.

NOTES

1. This definition of communication is based on Tannenbaum (1968, p. 19) and Hall (1982, p. 185).

2. Role conflict and role overload are discussed elsewhere in the handbook. Chapters 9 and 31 discuss role conflict and role overload, respectively.

3. Other examples of their work, or comments on their work, include: O'Reilly and Roberts (1977), Muchinsky (1977), Roberts and O'Reilly (1974a, 1974b), and Yaeger (1978).

4. These responses come not from Breaugh, but from Beehr (1976).

5. These responses come not from Breaugh or Lyons (1971), but from Lyons' original research (1968, pp. 139–140).

6. Neither does Lyons's original research (1968) provide descriptive statistics.

7. The research by Tracy and Johnson and House et al. also examines role conflict. To simplify the presentation, we ignore the material about role conflict. Role ambiguity and role conflict are generally examined as a unit and are the most widely researched types of stress. We discuss conflict elsewhere in the handbook. House, it should be noted, was Rizzo's colleague in the 1970 research that Breaugh investigated.

8. House and his colleagues also examined a criticism of role ambiguity advanced by McCandless in personal communication with them.

9. We ignore "predictability" here because it is not used nearly as widely as "certainty" and "clarity" in discussions of role ambiguity.

10. The Hackman and Oldham measure (1975) is brief, but so are some of the other measures of satisfaction reported elsewhere in the handbook.

11. This discussion of absenteeism is based on material presented in Chapter 2.

12. Standardization is examined in Chapter 28 of this handbook.

13. Cook and his colleagues (1981, pp. 199–203) have a helpful discussion

of the measure of role ambiguity (and role conflict) proposed by Rizzo and his colleagues.

14. Information about the instrument in this section was obtained through the courtesy of Professor Roberts.

15. To simplify the presentation, some development work that O'Reilly and Roberts did on the measures of accuracy and openness is ignored.

16. As in the discussion of validity, the data presented in connection with development work is ignored.

17. Provision of descriptive statistics does not, of course, completely specify the scoring.

18. There are complications here which it is not fruitful to examine in detail. The Roman Catholic Church, for example, is a voluntary association with a hierarchical structure of authority. Its priests, who are full-time "employees," are certainly "supervisors" who are responsible to their bishops. Trade unions, to consider a second complication, have democratic structures, in a normative sense, but also have full-time local employees who are responsible to full-time supervisors located higher in the union. Voluntary associations are not examined in this handbook, so there is no reason to consider these complications.

8

COMPLEXITY

Definition

Complexity is the degree of formal structural differentiation within an organization.[1] A highly complex organization is characterized by many occupational roles, subunits (divisions and departments), levels of authority, and operating sites. The word "formal" in the definition signifies that this differentiation is officially established by the organization; that is, the differentiation is not part of the informal structure of the organization. Horizontal, vertical, and spatial complexity are commonly distinguished dimensions. Occupational roles and subunits illustrate horizontal complexity, levels of authority are vertical complexity, and the numbers of operating sites represent spatial complexity. Discussions under the following labels usually contain information pertinent to horizontal complexity: division of labor, specialization, role differentiation, fragmentation, segmentation, fractionalization, job enlargement, work simplification, job enrichment, functional differentiation, social differentiation. Material relevant to vertical complexity is found in discussions of flatness–tallness and configuration. Spatial complexity is sometimes discussed as dispersion.[2]

The proliferation of terms for complexity illustrates the need for standardization of terms. It is difficult to attain cumulation (scholars building on each other's research) when terms proliferate. Researchers working on the division of labor, for example, may not recognize the relevance, because of the different labels, of work on specialization, role differentiation, fragmentation, fractionalization, job enlargement, work simplification, and job enrichment. Without cumulation, of course, there is much duplication of work—the wheel continues to be reinvented.

The material in this handbook on administrative intensity (Chapter 3) is relevant to Weber's work on bureaucracy (Albrow 1970). An organization with high administrative intensity, for example, will have a large bureaucracy. The term "complexity" captures another component of Weber's work. An essential feature of bureaucracy to Weber is the subdivision of work among occupational roles, or in other words, a division of labor. The division of labor is part of the horizontal complexity of an organization.

A discussion of complexity is a relevant place to treat the concept of technology. There is an immense literature dealing with technology, yet this handbook has no chapter with that label.[3] Technology is often viewed (Scott 1981, p. 17) as the means for transforming inputs into outputs.[4] We suggest that its treatment in the organizational literature generally involves complexity, departmentalization, mechanization, routinization, and standardization.[5] We have chapters on each of these five topics. In short, the material commonly treated under technology is covered in this handbook, but not under that label of technology.[6]

Two additional terms, diversification and mass production, require a brief discussion. There is a substantial organizational literature on diversification,[7] stemming mostly from Chandler's (1962) classic work on strategy and structure. DuPont Corporation, for instance, diversified when it broadened its product line from explosives to chemically based products such as paints, varnishes, and dyes. Our argument is that diversification is accompanied by increased complexity, especially horizontal and spatial complexity. Since material treated under diversifiction can thus be treated under complexity, distinction of the two concepts is not required.

Mass production, in our view, includes complexity, mechanization, and continuous-process production.[8] The division of labor is the pertinent dimension of complexity, since a system of mass production is characterized by an extensive division of labor. We have no chapter on mass production because material that would be treated under this label is examined under complexity and mechanization. Continuous-process production is not treated in this handbook.

Measurement

Organizations commonly maintain records that indicate their formal structural differentiation; scholars studying complexity typically make use of this means of collecting data. Complexity is thus like absenteeism and administrative intensity in that, unlike most topics in the study of organizations, these three concepts are generally investigated by studying records. In the selection, by Blau and Schoenherr (1971), records are used to study complexity. Where records are readily available as the basis for valid and reliable measures, it is feasible to examine a relatively large sample of organizations. As an example, Blau and Schoenherr had an *N* of 53 in their study. The study of organizations has moved from case studies in the 1940s and 1950s to relatively large samples, mostly since 1960, partly by capitalizing on the availability of records to study concepts. Large samples make possible estimation of organizational-level models by means of multivariate statistical techniques, such as regression analysis. The work of Blau an Schoenherr illustrates this advantage of large samples.

BLAU AND SCHOENHERR (1971)

Description

Descriptive information about the Blau and Schoenherr study is presented in Chapter 3 on Administrative Intensity and need not be repeated here. The site for their study was state employment security agencies in the United States.

Definition

Complexity is defined as "the number of structural components that are formally distinguished" by the organization (p. 302).[9] Four dimensions of complexity are distinguished: division of labor, major subunits, number of heirarchical levels, and the number of local offices (pp. 49–50, 80).[10] The fourth dimension, spatial complexity, is not a major concern for Blau and Schoenherr.[11]

Data Collection

Data collection and measurement will be discussed for the entire agency. Information to measure the division of labor came from the "official personnel roster" (p. 17).[12] Major subunits and the number of hierarchical levels were measured with data from organizational charts (pp. 401–404). Since spatial complexity is not a major concern, the source of data for its measurement is not specified. It is clear from the general thrust of the data collection, however, that information about the number of local offices comes from organizational records.

Calculation

The division of labor was measured by the number of official job titles, not counting different grades within one job title (p. 374). Major subunits were assessed by the number of divisions in the headquarters, whose head reports to the director or deputy director; a division must have at least five employees (p. 374). The number of hierarchical levels was gauged by the number of supervisory strata in the headquarters division with the most supervisory strata; assistant supervisors and deputies were not counted as distinct levels (p. 374). Spatial complexity was determined by counting the number of local offices (p. 80).

For the division of labor, major subunits, and hierarchical levels, the means and standard deviations are respectively 105.70 and 45.41, 6.60 and 2.53, and 6.00 and 1.11 (p. 374). There were 1201 local offices in the state agencies studied (p. 23).

Validity

Two of the major findings of the study are that increasing size generates complexity at decelerating rates, and that increasing complexity produces greater administrative intensity (pp. 297–329).[13] Size is treated in Chapter 27 of this handbook; here it will simply be noted that Blau and Schoenherr measured size by the number of full-time employees in an agency. Administrative intensity was defined as the extent to which an organization allocates resources to the management of its output. Since these findings are consistent with propositions in the literature, the findings support the construct validity of the measures.

Reliability

No data were presented about the reliability of the measures.

Comments

Since Blau and Schoenherr's definition of complexity is used in this handbook, there is consistency in definitions. Blau and Schoenherr, however, refer to their concept both as "complexity" and "differentiation." Clarity would have been enhanced by the use of a single label. Although both labels are used in the literature, we retain the label of complexity because there is no compelling reason to change from the 1972 edition. A single label is chosen to promote a more standardized terminology.

Blau and Schoenherr's use of records to measure complexity is excellent. Complexity can readily be measured in this manner, and the researchers took full advantage of the opportunity. Blau and Schoenherr's careful description of the records used, especially in their appendices, should make it fairly easy for other scholars to replicate their research.

Four comments about the calculations are appropriate. First, the details needed to perform the calculations are, as a rule, clearly indicated. In measuring the division of labor, for instance, the reader is instructed not to count the different grades within one job title. Anyone who has tried to count the number of job titles in an organization will appreciate this detail. Second, although it is the convention, no rationale is presented by the researchers for measuring the number of hierarchical levels in the division where the number is the highest, or "deepest" as is sometimes stated. Since there are multiple hierarchies of authority in organizations, the number of levels could be assessed by calculating an arithmetic mean for the different levels. Whichever measure is used, a rationale should be provided.

Third, detail is lacking regarding spatial complexity, probably because it is not a central part of the analysis. The number of operating sites was easy to measure in the agencies that Blau and Schoenherr studied; they simply counted the number of local offices. In many situations, however, determination of an operating site will not be so easy. For example, an operating site probably exists where there is a mailing address and some physical assets legally belonging to the organization. A post-office box would thus not qualify as an operating site. More detail is needed about the meaning of operating site. Fourth, the means and standard deviations are valuable, since they facilitate comparison.

The researchers do not adequately treat validity and reliability. There are data pertinent to validity, but no information is provided about reliability. This is a puzzling omission in an otherwise excellent study.

Source

Blau, P.M., and R. A. Schoenherr. 1971. *The Structure of Organizations* (New York: Basic Books).

NOTES

1. This definition comes from the work of Blau. See, for instance, Blau and Schoenherr (1971, p. 80). Blau and Schoenherr use both "complexity" and "differentiation" to refer to the concept of interest in this chapter.

2. An example of the use of dispersion for spatial complexity is Price (1972b, pp. 90–93).

3. Other labels synonymous with technology are "work flow" and "economy."

4. Scott's definition is consistent with Perrow's (1967) classic work on technology.

5. These five concepts, of course, do not include all of the material discussed under the label of technology. Continuous-process production, for example, is an important topic. Our contention is that most of the material treated under the label of technology is included in discussions of these five concepts.

6. The handbook treats technology as it treats bureaucracy in Chapter three, Administrative Intensity.

7. An example of this literature is Donaldson (1982).

8. For more information about our view of mass production, see Price (1968a, pp. 15–45).

9. Blau and Schoenherr, at this point, use "differentiation" rather than "complexity." As will be indicated later, the researchers use both labels to refer to the same concept.

10. The labels for the first three dimensions come from pp. 401–404.

11. Blau and Schoenherr refer to "spatial differentation" and not "spatial complexity" (p. 80). Spatial complexity is used in this handbook, to standardize labels.

12. See Blau and Schoenherr, p. 382 and p. 401, for more detail about the records used to measure division of labor.

13. Blau and Schoenherr's labels are changed slightly here to obtain more standardization of labeling.

9

VIOLENCE OF CONFLICT

Definition

Conflict is the struggle for scarce organizational resources.[1] Widely documented examples of conflict in American society are union management relations and relations among the military services. Management seeks to limit the amount of its resources allocated to wages, and the union presses for ever more wages for its members. Each military branch seeks to maximize its share of the defense budget, with the Secretary of Defense, the President, and the Congress ultimately deciding upon the final allocation. These examples of conflict are not either–or situations where one party wins and the other loses, as in an election or a sporting event.[2] Rather, each of the parties obtains differing amounts of a relatively limited resource. The resource base can increase or decrease—it is not fixed—but practically speaking, at any one time it is limited.

Our assumption is that conflict is ever present in organizations. It cannot be eliminated, but it can be regulated, for instance in the interest of improved effectiveness.[3] A sizable amount of scholarly effort has gone into a discussion of the means whereby conflict is regulated.[4]

It also is important to note what conflict does not mean. Different role expectations, cultural discrepancies, and interpersonal dislike are all excluded by our definition of conflict. These are important topics of research and are commonly labeled "conflict" in much of the organizational literature.[5] We, however, limit conflict to the struggle for scarce organizational resources. Different role expectations, cultural discrepancies, and interpersonal dislike may or may not be involved in conflict; they should be examined to the extent that they are involved.

What seems to be most critical for organizations is the extent to which conflict is violent; that is, how much force characterizes the relationship.[6] There is a continuum from peaceful discussion to armed clashes. Historically, union–management conflict in American society has been more violent than conflict among the military services. It is the violence of conflict that is the object of measurement in this chapter.

Measurement

Conflict has not traditionally been a major subject of study among organizational scholars. Scholars have been aware of conflict and the extent of its violence, but it has not been as carefully examined as has, for example, motivation and satisfaction,[7] which have been major preoccupations of many organizational scholars. Recently, however, there have been major organizational studies that are very much concerned with conflict (Burawoy 1979; Edwards 1979). None of these studies has proposed measures of the violence of conflict, however, and we have no suggestions to advance. The chapter is included in the handbook because the subject is important and measurement work in the area should be encouraged.

NOTES

1. This definition is based on the work of Coser (1956, p. 8).

2. We thus do not adopt Dahrendorf's either–or view of conflict (1959, p. 135), because it is too restrictive. There is, of course, a sizable amount or organizational conflict that involves either–or struggles for resources, such as the conflict for a limited number of executive positions. In our view, however, most organizational conflict is a matter of degree. The contending parties typically obtain varying amounts of the scarce resources. Conflict defined as the struggle for scarce resources includes both matters of degree and either–or struggles.

3. Effectiveness is treated in Chapter 13 of this handbook.

4. Classic examples of this literature are Dahrendorf (1959, pp. 157–318) and Selznick (1969). More recent literature that is strongly concerned with regulation of conflict is Bacharach and Lawler (1980) and Bacharach and Lawler (1981).

5. Different role expectations, typically referred to as "role conflict," is an especially important topic of research. Literature pertinent to this topic is cited in a discussion of "role ambiguity" in Chapter 7 on Communication.

6. This view of violence comes from Dahrendorf (1959, p. 212).

7. Motivation and satisfaction are treated in Chapters 19 and 26, respectively, in this handbook.

10

COORDINATION

Definition

Coordination is the degree to which the subunits of an organization operate according to the requirements of each other and of the total organization.[1] If a business firm, for instance, has manufacturing, marketing, accounting, and research subunits, coordination is high if these subunits work smoothly together to maximize the firm's profitability. Low coordination exists when the subunits refuse to communicate with each other or resist compromises in the interests of the firm. Material related to the concept of coordination is also found in discussions of "integration."[2]

Measurement

Coordination is often discussed but seldom measured. The concept, for instance, is important in Blau and Schoenherr's work on the determinants of administrative intensity (1971, pp. 297–329). In particular, they hypothesized that complexity would increase administrative intensity because it results in problems of communication and coordination. Blau and Schoenherr carefully defined and measured complexity and administrative intensity; coordination, however, was neither defined nor measured.[3] A notable exception to the lack of measurement work on coordination is Georgopoulos and Mann's study of community general hospitals, which is the most theoretically and methodologically sophisticated treatment of coordination in the literature.

GEORGOPOULOS AND MANN (1962)

Description

This study investigated the determinants of organizational effectiveness by studying ten community general hospitals. The following sample of respondents was used to collect information about coordination: nonmedical department heads, the hospital administrator, supervisory and nonsupervisory registered nurses, medical staff members with and without administrative responsibilities, x-ray technicians, and laboratory technicians. Two units of analysis were used, the hospital and the department of nursing. We use only the data with the hospital as the unit of analysis for the measurement of coordination.

Definition

Georgopoulos and Mann define coordination as "the extent to which the various interdependent parts of an organization function each according to the needs and requirements of the other parts and of the total system" (p. 273). The researchers distinguished four major types of coordination—corrective, preventive, regulatory, promotive—and two broad classes of coordination—programmed and general.

Data Collection

The data for the measurement of coordination were collected by questionnaire, with two sets of questions used. First, seven questions were used to obtain information about the four major types and two general classes of coordination (pp. 280–281). Second, two questions were used to obtain data about the reliability of the first set of seven questions (pp. 290–291). The first set of seven questions is as follows:

1. How well do the different job and work activities around the patient fit together, or how well are all things geared in the direction of giving good patient care?
2. To what extent do the people from the various interrelated departments make an effort to avoid creating problems or interference with each other's duties and responsibilities?
3. To what extent do people from different departments who have to work together do their job properly and efficiently without getting in each other's way?

4. In general, how do the patients feel about how smoothly the various personnel around them work together?
5. To what extent are all related things and activities well timed in the everyday routine of the hospital?
6. How well planned are the work assignments of the people from the different departments who work together?
7. In general, how well established are the routines of the different departments that have to work with one another?

There is a "check one," enclosed by parentheses, following each of the seven questions.

The responses for the seven questions are as follows:

1. Perfectly, very well, fairly well, not so well, not at all
2. To a very great extent, to a great extent, to a fair extent, to a small extent, to a very small extent

3 and 4. The patients feel that the personnel work together completely smoothly. The patients feel that the personnel work together very smoothly. The patients feel that the personnel work together fairly smoothly. The patients feel that the personnel do not work together smoothly. The patients feel that the personnel do not work together smoothly at all.

5. All related things and activities in the everyday routine are perfectly timed. They are very well timed. They are fairly well timed. They are not so well timed. They are rather poorly timed.
6. Extremely well planned, very well planned, fairly well planned, not so well planned, not well planned at all
7. Their routines are extremely well established, very well established, fairly well established, not too well established, their routines are not well established.

Two questions were used to assess reliability: In your opinion, to what extent has this hospital been able to achieve *singleness of direction* in the efforts of its many groups, departments, and individuals? In this hospital, how well organized or tied together are the efforts of its many groups and individuals toward providing the best possible patient care? Each of the two questions was followed by a "check one," enclosed by parentheses. The response categories for the first question were "to a very great extent, to a considerable extent, to a fair extent, to a small extent, and to a very small extent." For the second question they were "perfectly, very well, fairly well, no so well, not at all well."

Computation

Three sets of computations, each with different steps, were performed. First, for each of the seven questions and for each hospital in the study, the following steps were taken: (a) The responses were scored from one to five, with the lower score indicating greater coordination. (b) Mean scores for each group of respondents on each item were obtained and weighted with a sampling ratio interval. (c) Means for individual hospitals were computed for each of the seven questions. (d) Each hospital was rank-ordered according to its score on each of the seven means.

Second, four overall measures of coordination were derived from the first set of calculations:

> *Mean Rank*—Each of the ten hospitals had a rank for each of the seven questions. A mean of these seven ranks was computed to obtain the first overall measure of coordination.
>
> *Mean Score*—Each of the ten hospitals had a mean for each of the seven questions. A mean of these seven means was computed to yield the second overall measure of coordination.
>
> *Mean Score (General Coordination)*—The third overall measure was also based on a mean of the means. Only the means for the first four questions were used, however.
>
> *Mean Score (Programmed Coordination)*—The fourth overall measure was a mean of the means, but involved only the means for the last three questions.

The third set of computations relates to the two questions used to assess reliability. These two questions were scored like the first seven. The means for the first of the two questions range from 2.06 to 2.68; the means for the second question range from 1.60 to 2.68 (pp. 290–292).

Validity

Georgopoulos and Mann present six sets of determinants of coordination and offer the following summary of results concerning their predictions regarding these determinants: ". . . nearly all of our initial hypotheses as to the . . . determinants of organizational coordination received strong empirical support from the data . . ." (p. 342). These results thus support the construct validity of the measures of coordination.

Reliability

Georgopoulos and Mann present four sets of data pertinent to the reliability of their measures (pp. 284–293). First, there are rank-order correlations among the seven questions used to collect data about the four major types and two general classes of coordination. The seven questions are positively correlated, and 15 of the 21 correlations are statistically significant. Second, the hospitals were rank-ordered according to their scores on each of the four overall measures of coordination. The four measures are highly correlated; the rank-order correlation between any two of the four measures is 0.90 or higher, which is statistically significant beyond the 0.01 level.

Third, there are rank-order correlations between the four overall measures of coordination and their component items. Each of the four overall measures correlates positively and significantly with all of its components. Fourth, the two questions designed exclusively for the measurement of reliability were correlated with the seven questions and the four overall measures. The seven questions are those designed to measure the four major types and two general classes of coordination. The results show that singleness of direction (the first reliability question) is positively and significantly related to the seven questions and the four overall measures; all eleven correlations are statistically significant at the 0.05 level or better. The results for the second reliability question are similar to those obtained for the first. Questions designed to collect data about the types and classes of coordination (the seven questions) correlate positively with how well the efforts of hospital members and groups are tied together toward providing the best possible patient care, the second reliability question. The coefficients range from 0.43 to 0.70, and five of the coefficients are significant beyond the 0.05 level. The four overall measures of coordination correlate 0.72, 0.75, 0.81, and 0.62, respectively, with the second reliability question. All of these correlations are statistically significant at better than the 0.05 level.

Comments

Two conceptual points are relevant. First, since this handbook uses Georgopoulos and Mann's definition of coordination, there is no problem of consistency in definitions. Second, these researchers are to be recognized for grappling with the issue of the dimensions of coordination, since there has been little concern with this issue in the literature. It is difficult, however, to see how "types" and "classes" are different; they seem to be two terms for the idea of dimensions. What is needed is a series of dimensions for coordination. Georgopoulos and Mann have raised the issue of dimensionality, but have confused the discussion with "types" and "classes."

Four comments are pertinent about the questionnaire items. First, three of Georgopoulos and Mann's seven questions (one, four, and five) refer either to patients or to hospitals and will naturally have to be modified to be used in other types of organizations. Second, the fourth question asks the respondents to report on the feelings of the patients. It would seem better to ask the respondents to report only about their views; accurate reporting of the patients' views is problematical. Third, the researchers present only one form of the questionnaire in their Appendix. While this certainly saves space, it does mean that some questions are excluded. An example is the question regarding coordination, which was presented only to supervisory nurses. Fourth, there appear to be two issues identified in the first of the seven items in the index and the second question used to check reliability: fitting together of different jobs and activities and gearing toward good patient care. The traditional advice here is to restrict each question to a single thought.

Four comments about the calculations are relevant. First, Georgopoulos and Mann scored their items in such a way that a low score indicates high coordination. It is customary to use low scores to indicate low amounts of a variable, and this custom should be maintained to promote standardization. Second, the researchers weighted the responses to the seven questions about the types and classes of coordination according to "sampling ratio intervals" (p. 283). It is not clear from their description how this weighting is accomplished. Third, no rationale is presented for using the first four questions and the last three questions, respectively, for the third and fourth overall measures of coordination. Why not, for instance, the first three and the last four? The measures do appear to have adequate validity and reliability. The researchers are to be especially applauded for their careful concern with reliability.

We can find in the literature only one use, and this is but a partial use (Lyons 1968, pp. 46–49), of Georgopoulos and Mann's excellent measures. Part of this neglect is due to the lack of concern with coordination among organizational scholars; the concept does not have the appeal of commitment, motivation, or satisfaction. Some of the neglect, however, may be the result of the complicated nature of the work. For example, we have alluded to the four major types and two general classes as instances of undue complication. Weighting with the sampling ratio is another instance. Measures, no matter how valid and reliable, will probably not be widely used unless they are relatively simple. Complicated measures may be used by colleagues and students, but this type of usage is too limited to establish a measure in the field.

Source

Georgopoulos, B.S., and F.C. Mann. 1962. *The Community General Hospital* (New York: Macmillan).

NOTES

1. This definition of coordination comes basically from Georgopoulos and Mann (1962, p. 273).

2. The term "integration" comes from the work of Lawrence and Lorsch, who have done major work in the area of coordination. Some of their earliest work is cited in Price (1972b, p. 89).

3. Neither did Blau and Schoenherr define or measure communication.

11

DEPARTMENTALIZATION

Definition

Departmentalization is the manner in which work is subdivided in an organization.[1] The classic subdivisions are by function and product. Consider, for instance, an organization that produces three products (A, B, and C) and carries on manufacturing, marketing, and research. With a functional subdivision of work, subunits with similar inputs are grouped together: In this instance, three subunits would be differentiated: manufacturing, marketing, and research. Each subunit contributes similar inputs to the organization. With a product subdivision of work, subunits with similar outputs are grouped together—products A, B, and C, in this instance. Each subunit would be organized around a different product.

Work can also be subdivided by geography. With a geographical subdivision of work, an area will commonly have the same combination of inputs and outputs as the entire organization. In the previous illustration, the organization may have an eastern and western region, with each region carrying on manufacturing, marketing, and research activities around the three products. Material pertinent to departmentalization is found in discussions of "divisionalization" and "matrix structures."[2]

Most large business organizations in American society departmentalize by product (Daft 1983, p. 226). This type of subdivision results in relatively self-contained units that can be treated as "profit centers," thereby enhancing organizational control. Geographical departmentalization also results in relatively self-contained units. This type of subdivision of work is relatively rare, however, among large American business organizations. Examples of geographical departmentalization can be found among large multinational organizations, who frequently treat their overseas operations as regional units. Historically, functional departmentalization has been the preferred subdivision among American business organizations. Chandler's classic study (1962), now the source of the current focus on departmentalization, describes the change from functional subdivision to product subdivision among 70 large business organziations from 1909 to 1959. Literature in the Chandler tradition often refers to organizations with product types of departmentalization as having "multidivisional structures."

Organizations are often not totally departmentalized by function, product, or geography. An organization with a basically functional subdivision of work may have one or more product subunits; similarly, a basically product type of subdivision may have functional subunits, often in the central headquarters. We thus treat function, product, and geography as separate categories, but assign organizations to the categories, when it is necessary, by *primacy* of work subdivision. If most of the employees of an organization, for example, are assigned to functional departments, then the organization is referred to as having a functional structure. Number of employees is of course only one way to determine primacy; percentage of organizational expenditures is another. Whichever way is used, one must recognize that organizations are rarely structured totally by function, product, or geography.

Different levels of an organization may also departmentalize differently. A product subunit may, for instance, have functional groupings. Similarly, a geographic subunit may have product groupings. When referring to departmentalization, the reference of this handbook is always to the first subdivision of work within an organization. For example, an organization subdivided by products that, in turn, are subdivided by function, is classified as a product type of departmentalization.

Departmentalization is a common concern among scholars who study business organizations.[3] The concept, however, is a general one. The colleges of a university, for example, represent a product subdivision of work. Voluntary, short-term, general hospitals commonly subdivide their work functionally, according to the traditional medical specialties. Government agencies in the United States are mostly departmentalized by geography, their subunits often representing states and counties. The Roman Catholic Church basically subdivides its work geographically, by diocese; the Curia in Rome, however, represents major functional subunits. The religious orders—Jesuits, Benedictines, Francisicans, and so forth—are examples of product subunits within the Roman Catholic Church. Scholars interested in departmentalization thus should not restrict their concern to business organizations. When applied outside of business organizations, such as churches, the terms may sometimes seem to be inappropriate, but the classification system can operate successfully.

Scholars study departmentalization among business organizations mostly because of its importance for effectiveness.[4] Chandler, for instance, argued (1962, pp. 63–137) that DuPont's change from its early functional structure to its later product structure increased its profitability. The functional structure simply could not profitably manage DuPont's new products, which were added after the First World War. Our suggestion is that departmentalization may also be important for the effectiveness of nonbusiness organizations. The concept should not be restricted to business organizations, nor of course to effectiveness; different types of departmentalization may influence other important organizational properties.[5]

The material about departmentalization is our second examination of data pertinent to "technology" in this handbook; complexity was the first instance where material about technology was treated. It is our contention that most of the material about technology in the organizational literature is treated in discussions of complexity, departmentalization, mechanization, routinization, and standardization. Other chapters examine mechanization, routinization, and standardization. This handbook, in short, examines technology quite extensively, but not in a separate chapter under that label.

Measurement

The study of departmentalization is mostly based on organizational records. The selection, by Rumelt (1974), illustrates this pattern. We indicated in the introductory chapter that our view of measurement includes simple classification. Rumelt's study is an instance of measurement by classification, or what is often termed nominal-level measurement.[6]

RUMELT (1974)

Description

The subject of this study is the interrelationship of diversification strategy, organizational structure, and economic performance. Chandler's research (1962) on strategy and structure was the stimulus for Rumelt's study. The sample came from the 500 largest industrial organizations in the United States, as listed annually by *Fortune* magazine. The sample was constructed by selecting 100 organizations randomly from the 500 largest in 1949, another 100 from the 500 largest in 1959, and another 100 from the same category for 1969. Since a number of the same organizations were selected in more than one of the three samples, the total sample size is 246 rather 300.[7]

Definition

Rumelt's "organizational structure" is the central concern of this handbook. Five categories of organizational structure are distinguished (pp. 33–40). First there is the functional structure, in which "the major subunits are defined in terms of the business functions of stages in the manufacturing process" (p. 38). Second there is the functional structure, with subsidiaries that are "basically functional" but also have "one or more separate product divisions" (p. 38, p. 40). Third there is the product structure, which "consists of a central office and a group of operating divisions, each having the responsibility and resources needed to engineer, produce, and market a product" (p. 40). Fourth, the geographic structure has "a headquarters office and a group of operating divisions, each having the responsibility and resources needed to engineer, produce, and market a product . . . in a different geographic area" (p. 40). Fifth there is the holding company structure, which consists of "an association" of organizations (or divisions) "commonly owned by a parent corporation" (p. 40).

Data Collection

Data about organizational structure came from published records, examples of which are annual reports, prospectuses, books, articles, and *Moody's Industrials*. Annual reports are cited (p. 43) as the source for over half the information on structure, but records are not cited specifically for each organization.[8]

Computation

Rumelt classified each of his 246 organizations into one of the five categories of organizational structure as of 1949, 1959, and 1969. The estimated percentages of organizations in each category of structure for 1949, 1959, and 1969, respectively, are as follows (p. 65): functional, 62.7, 36.3, 11.2; functional with subsidiaries, 13.4, 12.6, and 9.4; product, 19.8, 47.6, and

75.5; geographic, 0.4, 2.1, and 1.5; holding company, 3.7, 1.4, and 2.4. Two major conclusions emerge from this classification. First, there was a major shift from functional structures to product structures between 1949 and 1969. In 1949, slightly over three-quarters (76.1) of the organizations had some type of functional structure, whereas nearly 20 percent (19.8) had product structures; by 1969, these percentages changed to slightly more than 20 percent (20.6) for functional structures and slightly more than three-quarters (75.7) for product structures. Second, a small minority of organizations subdivided their work geographically or used holding companies. The combined percentage for these two categories of structure in 1949 was slightly over four percent (4.1); by 1969, this percentage was substantially unchanged (3.9).

Validity

Two types of data are relevant for assessing construct validity. First, the dominance of the product type of structure is consistent with the results of other research (p. 63 and p. 149). Rumelt's contribution is to add precision to previous findings. Second, the results for structure and economic performance are mostly in agreement with expectations (p. 126). Organizations with product types of structures significantly outperform those with other types of structures in all growth measures and in risk-adjusted growth of earnings per share. The returns on capital and equity for the product types of structures are, however, about average.[9]

Reliability

No information is presented about reliability.

Comments

The sample of organizations studied is impressive—246 large organizations examined over a 20-year period for three variables, diversification, departmentalization, and effectiveness. Only the Aston Group and Blau have had samples as impressive; although their samples were smaller than Rumelt's, they examined a greater range of variables. The work of Rumelt, Aston, and Blau is a major advance beyond the case studies of the 40s and 50s.

Rumelt's "organizational structure" corresponds to our departmentalization; his material is thus pertinent to our concern. This handbook, however, uses "structure" more inclusively than Rumelt. Patterns of interaction (our definition of structure) encompasses, for example, both diversification and departmentalization. Rumelt's five categories of organizational structure correspond fairly well to our dimensions of departmentalization. Our functional subdivision of work includes Rumelt's first two categories, functional and functional with subsidiaries. The latter is functional because it primarily subdivides work by input. Our product and geographical subdivisions are identical to Rumelt's categories with the same labels. Rumelt's fifth category, the holding company structure, is inappropriate for departmentalization. The idea of the subdivision of work is only applicable to operating organizations; the holding company is a legal entity that produces nothing. One should study the departmentalization of the organizations owned by the holding company, rather than the holding company itself.

We previously commended Rumelt for his large sample. Here it only needs to be noted that a study of this scope is made possible by the use of records. Scholars should devote more effort to the use of records to study organizations.

Two measurement points are pertinent. First, it is not possible to reproduce Rumelt's classification of his sample by departmentalization, because he does not link specific published records to specific organizations. He does, however, list (pp. 174–224) all of the organizations in his sample and indicates how he classified them by diversification strategy and departmentalization. With a sample of this size, and with the immense number of sources examined, it is pedantic to criticize him for failing to provide the evidence to reproduce his classifications. Second, Rumelt explicitly addresses the issue of validity (see, for example, p. 121), but does not discuss reliability. With respect to reliability, for example, Rumelt could have statistically assessed the extent to which a research assistant was able to reproduce his classification of some of his organizations.

Source

Rumelt R.P. 1974. *Strategy, Structure and Economic Performance* (Boston: Graduate School of Business Administration, Harvard Univ.).

NOTES

1. This definition is based on Scott (1981, pp. 213–214). Although we deviate from his work in several important respects, our discussion of depart-

mentalization has greatly benefitted from Daft's treatment of this topic (1983, pp. 200–258). Also relevant is Simon's critique (1950, pp. 28–35) of the classical scholars who wrote about departmentalization, and Simon et al. (1958, pp. 150–179).

2. See Daft (1983, pp. 237–243) for a helpful discussion of matrix structures. We do not treat matrix structures in this chapter because our concern is with the subdivision of work rather than the assignment of authority. The work structure of an organization is analytically distinct from its authority structure.

3. Some examples of this concern are Chandler (1962), Daft (1983, pp. 200–258), Grinyer and Yasai-Ardekani (1981), and Rumelt (1974).

4. See Daft (1983, pp. 200–258) for a review of these data. Effectiveness is treated in Chapter 13 of this handbook.

5. See, for example, Price's study (1968b) of two state government organizations.

6. Our previous reference to primacy regarding departmentalization is not inconsistent with the idea of nominal measurement. Each organization, based on its primary type of work subdivision, has but one type of departmentalization.

7. More detail about the sample is found on p. 40 of Rumelt's work.

8. Additional data about the published records are found on pp. 43–44.

9. A discussion of economic performance is found on pp. 168–169. Rumelt's "economic performance" corresponds to our effectiveness.

12

DISTRIBUTIVE JUSTICE

Definition

Distributive Justice is the degree to which rewards and punishments are related to performance inputs.[1] Performance inputs into the organization are of various types, with the most commonly examined being effort, experience, and education. Our concern with distributive justice centers mostly on effort. Distributive justice is high in an organization when effort is rewarded and its absence punished. Effort is sometimes termed "hard work." We assume that when effort is rewarded (whether by pay, recognition, or advancement) employees usually define the situation as "equitable" and "fair." Distributive justice, however, is not defined as equity and fairness, since these are subjective definitions, not an objective property of the organization.

Since performance inputs into organizations vary, and since managers usually try to relate performance to rewards and punishments, the result is typically inequality.[2] Distributive justice, it should also be noted, does not refer to the quantity of rewards and punishments dispensed by an organization. It is possible for distributive justice to be high in organizations that are poor in resources, or for it to be low in wealthy organizations. Distribution, rather than quantity, is what is critical for distributive justice. Literature about distributive justice is also found in discussions of "merit pay." When pay is distributed by merit, rewards and performance inputs are positively related.

Measurement

As indicated in the introductory chapter, our preference is for published measures. Our selection, which presents the Price and Mueller measure as used by Bavendam, Boyer, and Sorensen, is exempted from this preference because it is substantially better than any other measure we could locate. Based on our work on absenteeism and turnover (1981, 1986), the measure, to be called the Distributive Justice Index, (DJI) was used successively by Boyer, Bavendam, and Sorensen. The measure will probably be available in published sources in the near future.

BAVENDAM, BOYER, SORENSEN

Description

Research by Price and Mueller on the determinants of turnover and absenteeism (1981, 1986) has resulted in several attempts to measure distributive justice. The three researchers we identify here used measures derived directly from the work of Price and Mueller. For this reason we identify the measure as the Price and Mueller Distributive Justice Index (DJI). Bavendam's research, designed to identify the determinants of intention to quit, is based on a study of all employees in a 600-bed hospital in a midwest metropolitan city in 1982; the sample size was 1400. Boyer's research studied dental hygienists from a judgment sample of 48 of 199 dental hygiene programs in the U.S. The objective of the study was to determine the effects of schooling and work setting on dental hygienists. Data were collected in February of 1983 (N = 611) and September of the same year (N = 820). Sorensen's research was on the determinants of commitment and studied all nursing-department personnel (N = 578) in a 692-bed military medical center in a metropolitan city in the Southwest in 1984.

Definition

All three studies define distributive justice as we do—the degree to which rewards and punishments are related to performance inputs.

Data Collection

All three studies relied on self-administered questionnaires. Boyer and Sorensen used the same six items, while Bavendam relied on only five. Sorensen used the following lead-in statement: "Fairness in the following questions means the extent to which a person's contributions to the hospital are related to the rewards received. Money, recognition, and physical facilities are examples of rewards." The Boyer and Sorensen items are as follows:

1. To what extent are you fairly rewarded considering the *responsibilities* that you have?
2. To what extent are you fairly rewarded taking into account the amount of *education and training* that you have had?
3. To what extent are you fairly rewarded in view of the *amount of experience* that you have?
4. To what extent are you fairly rewarded for the *amount of effort* that you put forth?
5. To what extent are you fairly rewarded for *work that you have done well*?
6. To what extent are you fairly rewarded for the *stresses and strains* of your job?[3]

Five response categories were used for each item: rewards are very fairly distributed; quite fairly distributed; some fairness; very little fairness; rewards are not distributed at all fairly.

Bavendam's items included exactly the same content as all of the above items, except for item 3. Bavendam used a different lead-in statement and phrased the items somewhat differently. The following lead-in was used: " How do you rate the *fairness* with which you have been treated by the hospital in the *distribution of rewards*? (Rewards are fairly distributed if they are related to effort, training, and experience; the more effort, training, and experience, the more rewards there should be.)" Five items were used:

1. How *fair* has the hospital been in rewarding you when you consider the *responsibilities* you have?
2. How *fair* has the hospital been in rewarding you when you take into account the amount of *education and training* that you have?
3. How *fair* has the hospital been in rewarding you when you consider the amount of *effort that you have put forth*?
4. How *fair* has the hospital been in rewarding you when you consider the *stresses and strains of your job*?

5. How *fair* has the hospital been in rewarding you when you consider the *work that you have done well*?

Five response categories were used for each item: hospital has been very fair; somewhat fair; neither fair nor unfair; somewhat unfair; hospital has been very unfair.

Computation

In all of the studies the scores for the separate items are summed for each individual. Boyer and Sorensen assigned scores of one to five to the response categories, with a five indicating "rewards very fairly distributed" and a one indicating "rewards not distributed at all fairly." Similarly, Bavendam assigned a score of five to "hospitals have been very fair" and a one to "hospitals have been very unfair." Bavendam's five-item index has a mean of 18.9 and standard deviation of 5.3. The six-item index has a mean of 16.3 with a standard deviation of 6.1 in Sorensen's study. The Time-1 mean in the Boyer study is 14.4 with a standard deviation of 5.2; the comparable statistics for the Time-2 study are 21.2 and 5.3.

Validity

In that factor analysis is used, all three studies provide data relevant to discriminant and convergent validity of the DJI. Bavendam's factor analysis included the five items, along with items designed to measure job opportunity, pay, routinization, centralization, downward instrumental communication, promotion opportunity, importance of income, and external reasons for not quitting. Relying on an orthogonal rotation, the five items measuring distributive justice factored together with high factor loadings. Sorensen's factor analysis involved simultaneous examination of the six distributive justice items and indicators of personal salary, kinship responsibility, general training, commitment, job satisfaction, routinization, volition–sacrifice, irrevocability, integration, job centralization, downward communication, upward communication, horizontal communication, fringe benefits, promotion opportunity, and professionalism. The six items loaded highly on a single factor. In Boyer's study, the same six items were factor-analyzed with indicators of opportunity, routinization, instrumental communication, centralization, integration, and professionalism. For both time periods, the six items factored separately under a single factor.

Reliability

Cronbach Alphas are available in all three studies: Bavendam 0.94; Sorensen 0.95; Boyer 1 0.94, and Boyer 2 0.95.

Comments

Althugh these studies represent yet unpublished work, they do systematically assess the measurement characteristics of the DJI. The three different settings, although all health-care related, allow for more confidence in inferences about the measure. Since the three studies were influenced by the authors of this handbook, it is not surprising that their definition is consistent with the one presented here.

There was some variation in the actual wording of the items and the lead-in statement across the studies, and Bavendam chose to use only five items rather than six. Even with the variations, however, the findings about the measure are remarkably consistent, and we find no basis for recommending one version over the other.

The means and standard deviations should serve as normative data for those using this measure. The factor analyses, which simultaneously examined other concepts, lend considerable support for convergent and discriminant validity of the measure. The high reliability of the DJI is indicated by the extremely high Alphas.

Sources

Bavendam, J.M. 1985. The influence of organizational communication on intention to quit (Unpublished Ph.D. Dissertation. University of Iowa). Boyer, M. 1985. Turnover within the first year of dental hygiene employment: A test of Price's causal model of turnover (unpublished paper). Sorensen, W. B. 1985. A causal model of organizational commitment (Unpublished Ph.D. Dissertation. University of Iowa).

NOTES

1. Our thinking about distributive justice has been very much influenced by Homans (1961, pp. 232–264). We have especially benefitted from helpful comments by former colleagues at Iowa, Toby Parcel and Dave Wagner. Al-

though they use distributive justice more generally than we do, we have appreciated the helpful research by Dittrick and Carrell (1979).

2. The result would be equality if all performance inputs by employees were the same. Given differences in ability, training, and motivation, equality is an unlikely outcome.

3. Sorensen included the name of the organization in the question; Boyer did not.

13

EFFECTIVENESS[1]

Definition

Effectiveness is the financial viability of an organization.[2] At the minimum, an organization that is financially viable can pay its bills as they come due. An organization that can pay its bills and have surplus funds is more financially viable than an organization that has to borrow to discharge its obligations. A large surplus indicates even higher financial viability, since it signals the capacity to pay bills well into the future.

This view of effectiveness is different from, but not incompatible with, the systems resource and goal-achievement approaches to effectiveness.[3] Our definition is narrower, in that financial ability focuses on one resource, capital, and ignores land, equipment, labor, and managerial knowledge.[4] Financial viability is a goal of the major decision-makers of an organization.[5] We thus do not basically dissent from the goal approach—it is a workable strategy—but do not define effectiveness as goal achievement, for reasons to be indicated.

Financial viability, it should be stressed, is not size and productivity. Since these two concepts will be discussed elsewhere in the handbook, we will not elaborate on their meaning now. Two brief observations can be made, however. If effectiveness is defined as the successful acquisition of resources, as is the case with the systems resource approach, it is very easy to confuse effectiveness with size, since size is sometimes measured by success in acquiring land, equipment, labor, capital, and managerial knowledge. We want clearly to distinguish size from effectiveness. With regard to productivity, our view is that high productivity generally is positively related to financial viability. The exceptions, however, are significant. A business organization may be very productive but experience low profitability due to very intense competition, or a business organization may be very low on productivity—some defense contractors come to mind (Melman 1970) as illustrations—but be highly profitable because of very favorable conditions of doing business (such as having large Department of Defense contracts). Productivity must be clearly distinguished from effectiveness.[6]

Four reasons may be advanced for our conceptualization of effectiveness. First, financial viability is relatively easy to measure. The goal approach is difficult to use because it requires a major effort to determine the operative organizational goals of the major decision-makers (Price 1972a). With service organizations such as universities and hospitals, accurate determination of operative organizational goals is especially difficult. With the systems resource approach, acquisition of land and equipment are relatively easy to measure, but labor, especially when viewed in terms of quality, and managerial knowledge are difficult to operationalize. It is not easy to measure financial viability, as will soon be indicated, but it is much less difficult to assess than successful goal achievement or resource acquisition.

Second, financial viability appears to be strongly and positively correlated with traditional views of effectiveness.[7] Consider the goal approach to effectiveness for universities and hospitals. Let us assume, for a sample of these organizations, that extensive research has demonstrated that these organizations have, respectively, goals of "quality research" and "sound patient care." Let us further assume that valid and reliable measures have somehow been devised for quality research and sound patient care. Our argument would then be that a ranking of the universities and hospitals in the sample by goal achievement with respect to quality research and sound patient care would be strongly and positively correlated with a ranking of these same organizations by financial viability.

The same argument would be applied to the systems resource approach. Organizations that are successful in acquiring land, equipment, labor, and managerial knowledge (assuming that these acquisitions can be measured in a valid and reliable manner) will also be successful in acquiring capital, that is, financial resources. We are arguing correlation and not causality. It is not being asserted, for instance, that financial viability determines the acquisition of other resources; rather, it is being argued that successful financial viability coincides with successful acquisition of land,equipment, labor, and management knowledge.[8] This second argument is very important, because financial viability is not very important unless it is strongly and positively correlated with successful goal achievement and resource acquisition.

Third, financial viability creates a reasonable possibility of formulating a theoretical model of the determinants of effectiveness. The goal approach has moved in the direction of assessing achievement of the goals of different organizational constituencies.[9] In a hospital, for example, goal achievement might be examined for the patients, professional staff, administrators, and some members of the environment, such as the public at large. The goals of these constituencies are different, and it is difficult to see how a model could be formulated with this direction of research. What one visualizes with this type of research is a series of different models, one for each type of constituency. It is not clear that a single model can be formulated with effectiveness defined as financial viability. We believe, however, that it is easier to construct a model for a single idea, such as financial viability, than for a set of different ideas, such as the goals of different constituencies who are involved with organizations.

Fourth, financial viability is applicable to social systems other than organizations. Families, communities, and societies can all be readily dealt with in terms of financial viability.[10] The introductory chapter indicated that our frame of reference was general, despite its emphasis on organizational measures. Families, communities, and societies can be viewed as having "goals," but this view is more difficult to defend for these systems than for organizations. There is little difficulty in viewing the financial viability of families, communities, and societies. Furthermore, there is even a research tradition that examines the financial viability of communities and societies.[11] It is also, of course, possible to view families, communities, and societies as being successful in resource acquisition, a view that would be expected, since capital is one type of resource.

Conceptualization is always to a certain degree arbitrary. As is apparent in the discussion thus far, effectiveness can be defined in a variety of ways, and there is no one best way to define the term. Some definitions, however, may be more useful than others, and this appears to be the case with effectiveness defined as financial viability. Our definition advances a concept that is relatively easy to measure, appears to be correlated in a strong positive manner with traditional views of effectiveness, provides a reasonable basis for formulating a theoretical model of determinants of effectiveness, and is applicable to families, organizations, communities, and societies.

Even with these advantages two objections to viewing effectiveness as financial viability are readily apparent. First, the goal approach is so well established that this conceptualization encounters considerable resistance among scholars, especially when service organizations are involved. It almost seems sacrilegious to refer to the effectiveness of universities and hospitals in terms of financial viability, since nearly all discussions of effectiveness for these types of organizations emphasize the "goals" of quality research and sound patient care, respectively. If administrators in universities and hospitals actually assign priority to financial viability, fierce resistance will be generated among the professional staff.

In taking this position we are, admittedly, departing from the consensus and will be criticized for this deviation. Our contention, however, is that the arguments for this view outweigh the counterarguments. In claiming this we are not denying that the goal approach to organizations is workable; based on the rationale previously indicated, however, we do not think it advisable to define effectiveness as goal achievement.

The second objection to effectiveness defined as financial viability is that such a conceptualization renders impossible standardized measurement. There is no way, for example, that the financial viability of a manufacturing firm can be measured in the same way as that of a university or hospital. This objection is also serious, since a major goal of this handbook is to promote standardized measurement, thereby facilitating the growth of theory through comparison of results.

This objection is also sound. The lack of standardization, however, does not destroy the possibility of building theoretical models. If a model is accurate, then it should be able to withstand tests with different measures. Precise comparison is not possible with different measures, but one can assess with different measures whether or not the model is basically supported by the results. There is even an advantage in such comparisons, since the traditional preference is for models that are not method specific. Just as scholars are suspicious of models that are only confirmed with, for instance, questionnaire data, they are also suspicious of models that are only confirmed with a single standardized measurement.

Measurement

There is a sizable literature about the measurement of the financial viability of business organizations.[12] Effectiveness for these organizations is commonly defined in terms of financial viability, so there should be little scholarly or employee resistance to our conceptualization from these areas. There is, however, little measurement research on the financial viability of nonbusiness organizations. In this section we will indicate two widely used measures of financial viability for business organizations, and then suggest measures for two different types of nonbusiness organizations, school districts and government agencies.

Before advancing these measures, however, two comments about comparisons are in order. First, comparisons for these measures are most realistically made with other, similar organizations. Organizations, for example, commonly have a set of organizations which they view as competitors and with whom they regularly make evaluations in terms of different criteria. It is among these competitors that comparisons must be made. Designation of competitors is, of course, not limited to business organizations. School districts and government agencies define other organizations as competitors.

Second, comparisons must be conducted in historical context. It is not enough to know that one organization is more financially viable than its competitors at one point in time. The direction of its movement, becoming more or less financially viable, needs to be ascertained. Organizations that at one point in time are widely believed to be financially viable, often turn out over longer periods to have much less financial viability, or even in some extreme cases to be bankrupt. The length of the time period will vary. Organizations operating in rapidly changing environments probably require shorter time periods than organizations operating in environments with little change. The historical dimension naturally means that all comparisons must be adjusted for changes in the price level.

Two widely used measures of financial viability for business organizations are "returns on assets" and "returns on equity" (Rumelt 1974, p. 94). Returns for both these measures mean the amount of net profits—what remains after expenses are subtracted from income. Assets refer to the resources at the disposal of the organizations, as stated, for example, on the balance sheet. Returns on assets is sometimes termed "returns on investments," and its use as a measure of financial viability was pioneered by DuPont Corporation in the early 1900s (Chandler 1962, pp. 63–199). Equity is what remains after the liabilities of an organization are subtracted from its assets, sometimes referred to as "stockholders equity." Return on assets and returns on equity must be computed using standard accounting procedures.

Note that both returns on assets and returns on equity are ratios rather than absolute amounts. Ratios make possible comparisons between organizations of different sizes. The most meaningful comparisons, as previously indicated, are historical ones between competitors. Although not as meaningful because of different markets, it is possible to use these ratios to compare noncompetitors among business organizations, such as between a manufacturing firm and a for-profit hospital. Comparisons among noncompetitors are not totally unreasonable, because all business organizations strive to obtain a share of the limited amount of capital in a society.

Returns on assets and equity can, in principle, be computed for not-for-profit organizations. Consider, for instance, voluntary, short-term general hospitals. The tax laws are different for these hospitals, but the difference between income and expenses (net profits, in other words) can be calculated, and the hospitals have some incentive, especially with the new system of prospective payments (Inglehart 1982), to be "profitable." These ratios should be especially meaningful for comparisons of all the voluntary, short-term general hospitals located in the same community.

A measure of financial viability for school districts might be revenues per pupil. The greater the revenues per pupil, the greater the financial viability. This type of measure is of course sensitive to the wealth of the community in which the school district is located. The wealthier communities, of course, would obtain higher scores (be more effective) than the poorer communities. The most meaningful comparisons would be between similar communities: Wealthy suburban areas around large cities would be compared with each other and inner city schools in the large cities would be compared. Revenues per pupil can be compared, however, among communities that differ greatly by wealth. There should be no major problem in obtaining the data for this measure, since school districts commonly maintain and report this information. As with returns on assets and equity, revenues per pupil is a ratio. A measure of this type should also be applicable to universities and hospitals.[13]

There is considerable discussion among scholars of education, stimulated mostly by the Coleman Report, as to whether or not revenue per pupil is correlated with successful learning by students.[14] From our position, we would assume that revenues are positively and strongly correlated with learning. If future research indicates no such correlation, our argument for financial viability is weakened, since we argue that financial viability is strongly and positively correlated with traditional views of effectiveness. The effectiveness of school districts is traditionally assessed by successful student learning.

A measure of financial viability for government agencies might be revenues per employee. Since these agencies do not have clients like schools and hospitals, "employee" must be the referent for the measure. Because organizations have both full-time and part-time employees, however, the question arises as to how to count the number of employees. As the number of students in a public school district provides an approximate idea of the magnitude of the task being undertaken by the school district, so the number of full-time equivalent employees may provide an approximation for a government agency. Use of full-time equivalents assumes that two half-time employees do approximately the same amount of work as one full-time employee. We do not consider members of governing boards (trustees, regents, and commissioners) to be employees.

There are, of course, a variety of government agencies, and in agreement with our previous position, it would be most meaningful to compare similar agencies. Police and fire departments, for instance, should be compared with their counterparts in other similar communities. As one can to some extent meaningfully compare suburban and inner-city public schools by revenue per pupil, however, so one can compare police and fire departments by revenue per employee.

Discussion of schools, universities, hospitals, and police departments brings to mind a set of organization-specific measures of performance commonly used for these organizations. Universities are, for instance, commonly evaluated by the subjective assessments of professors and administrators (Carter 1966; Roose and Anderson 1970). Hospital performance is also assessed by subjective evaluations (Geogopoulos and Mann 1962), plus objective measures such as the reports by tissue committees. Finally, police departments are often evaluated by the extent to which they solve crimes reported to them, the well-known clearance rate (Skolnick 1967, pp. 167–181). Other organization-specific measures of performance could be cited.

These organization-specific measures can serve as checks for our proposed measures. In keeping with our position, we would assume that our measures of financial viability are positively related in a strong manner with these specific measures. Universities, for example, that are evaluated by knowledgeable observers as being quality educational performers should also be more financially viable than universities that are not quality educational performers. The historical dimension is especially important here, since what is required are correlations over a substantial period of time, such as a decade. It takes time, for instance, for inadequate resources to influence adversely the educational performance of a university. Research is needed to assess our position.

The use of records is becoming more important in the study of organizations. This handbook is both a reflection of this importance and an effort to encourage the trend. We have sought to evaluate records critically, however. Much organizational behavior never is recorded, and there is a serious question as to whether record-based measures of financially viability (returns on assets, returns on equity, revenues per pupil, and revenues per employee) are too crude to be correlated with such subtle performances as quality education, adequate patient care, and law and order. Our impression is that strong positive correlations do exist, but only further research can tell. It may be that the measures proposed have very little relationship with the traditional measures of goal-achievement. If so, and if other similar financial measures cannot be found, then the conceptual approach suggested in here can be discarded. Our belief, however, is that financial resources are the foundation of all modern organizations, and if this can be adequately measured, financial viability will be at least historically correlated with other variables of interest to organizational scholars.

NOTES

1. There is an immense literature about effectiveness. Some recent work, which cites most of the earlier literature, includes Cameron (1978; 1981), Campbell et al. (1974), Becker and Neuhauser (1975), Goodman and Pennings (1977), Spray (1976), Steers (1977), and Zammuto (1984).

2. Our view of effectiveness has been strongly influenced by the work of Melman (1965; 1970). We depart in significant ways, however, from Melman's perspective.

3. Discussions of the systems resource and goal-achievement approaches are found in Price (1972a). Also relevant is Price (1968a; 1972b).

4. For capital as one type of resource, see Goodman and Pennings (1977, p. 176).

5. Major decision-makers are sometimes referred to as the "dominant coalition" (Goodman and Pennings 1977, pp. 112, 152, 190, 191, 240).

6. Melman (1958) was one of the first scholars to make a clear distinction between productivity and effectiveness.

7. Systematic evidence for this view does not exist. This is our impression as to what a codification of the literature would reveal.

8. An interesting description of what the major decision-makers of an organization will sacrifice to maintain financial viability is provided by Moritz and Seaman (1981) in their description of Chrysler Corporation. The Chrysler case illustrates how size and autonomy may be sacrificed to maintain financial viability. If an organization becomes smaller or loses some of its autonomy, as was the case with Chrysler, the personal finances (salaries, bonuses, stock options, and so forth) of the top executives need not be adversely influenced. The loss of financial viability, however, has a direct negative impact on the personal finances of the top executives.

9. For an example of one version of this direction see Cameron (1978; 1981).

10. For an excellent discussion of financial viability for a community, New York City in this case, see Morris (1981). Morris's discussion of New York City is similar to Moritz and Seaman's (1981) study of Chrysler.

11. We have in mind here work like Morris's (1981) study of New York City and the discussion by economists of the balance of payments for societies.

12. See Rumelt (1974) for a sophisticated use of these measures. Rumelt's term for financial viability is "economic performance."

13. For universities, see Blau (1973, p. 286). The problem of full-time students and part-time students will have to be faced with universities. It is

probably best to count the number of different students in universities, ignoring the full-time versus part-time distinction. This measure provides an idea of the magnitude of the educational task facing universities. Local school districts deal only with full-time students, so this problem does not arise when discussing these districts.

14. For some information on this topic see Coleman (1966; 1967).

14

FORMALIZATION

Definition

Formalization is the degree to which the norms of an organization are explicity formulated (Hall 1982, pp. 95–99; Scott 1981, pp. 59–62). One way explicitly to formulate the norms of an organization is to reduce them to written form.[1] Thus an organization that compiles its norms in written form generally has a higher degree of formalization than an organization that does not compile its norms in this manner. Formalization, however, can be achieved without written records.[2] Many organizations, especially the smaller ones, have explicitly formulated norms for their employees, but only a small portion of these are written. An organization would also be less formalized if much of the contact between its employees was not covered by norms, the situation sociologists refer to as anomie (Merton 1957, pp. 131–194). Material pertinent to formalization is also found in discussions of "specification of procedure," "job codification," "degree of structure," and "documentation."[3]

Weber's emphasis on "bureaucratic rules" illustrates concern with formalization, since rules are explicitly formulated norms. (Albrow 1970, pp. 33–50). In our examination of administrative intensity and complexity[4] we conceptualize additional components of Weber's classical discussion of bureaucracy. His material about bureaucracy is contained in this handbook, but not in a single chapter dealing with "bureaucracy." We treat Weber's material as a set of separate concepts.

Measurement

The three selections illustrate three different approaches to the measurement of formalization. Blau and Schoenherr (1971), the first selection, relies totally on records, whereas Oldham and Hackman (1981), the third selection, makes use of questionnaires. The Blau and Schoenherr approach is not widely used, but appears to have promise. The Oldham and Hackman approach embodies the questionnaire strategy for studying formalization pioneered by Hage and Aiken's major research (1969).[5] Inkson et al. (1970), the second selection, uses a combined interview–records approach to collect data about formalization. The selection by Inkson and his colleagues, who are part of the Aston Group whose important work began to appear in the 1960s, was used in the 1972 edition of the handbook, but unfortunately has not been generally used and researched. We find the Aston approach intriguing and will offer a number of comments regarding its development.

BLAU AND SCHOENHERR (1971)

Description

A description of this study of state employment security agencies is presented in the discussion of Administrative Intensity and need not be repeated here.

Definition

Formalization is defined as the "extent of regulation" that an organization has pertaining to the employment of its personnel (p. 57). It is clear from the discussion that the reference is to written regulations (p. 58).

Data Collection

Data about formalization come from the official civil-service regulations of the states in which the employment security agencies operated. The civil-service regulations consist of written rules governing appointment, probation, promotion, and separation for all employees under the merit system of the state.

Calculation

The score was obtained by counting the number of words, based on a sample of pages, in the civil-service manuals. The greater the number of words, the greater the formalization. A mean of 18.40 (thousand) and a standard deviation of 11.01 (thousand) are reported (p. 374).

Validity

Data are provided for construct validity. The study shows that formalization results in low centralization, a finding that is contrary to the main thrust of the literature (pp. 111–139). Blau and Schoenherr believe, however, that this finding makes sense for these government agencies, because conformity to the civil-service regulations diminishes the risk of decentralization by increasing the reliability of operations. The Aston work in England is cited as providing data consistent with these findings (p. 121).

Reliability

No data are provided about reliability.

Comments

Our view of formalization is consistent with Blau and Schoenherr's definition. An organization that has a large number of written rules governing its personnel is one that is explicit in its norms. The researchers, however, take a narrow focus and restrict formalization to personnel procedures, whereas we conceive of explicitness as applicable to all aspects of an organization's operations. An organization, for instance, can explicity regulate work procedures as well as personnel procedures.

We are intrigued by the possibility of measuring our general concept of formalization by personnel procedures. Blau and Schoenherr do not do this—they restrict formalization to personnel procedures—but the idea seems plausible. An organization that formalizes its personnel procedures may also formalize the remainder of its operations, and it is relatively easy to examine the rules governing employment. There may, however, be some difficulty in locating exactly the written rules that pertain to personnel operations, since state government agencies may be exceptional in having a distinct body of written rules petaining to personnel.

The validity and reliability of Blau and Schoenherr's measure is not demonstrated. No data are provided about reliability, and the main finding about formalization and centralization is inconsistent with most of the literature. As we have previously indicated, this otherwise exceptional study is marred by its lack of concern with validity and reliability.

Source

Blau, P.M., and R.A. Schoenherr. 1971. *The Structure of Organizations* (New York: Basic Books).

INKSON, PUGH, AND HICKSON (1970)

Description

The aim of this study is methodological; specifically, the goal is to develop a short form of an interview schedule to represent accurately the concepts of "context" and "structure." A long form of the interview schedule was used in previous research on 52 organizations in the English Midlands. To develop the short form, the researchers studied 40 organizations which, like the previous 52, were located in the English Midlands. Of these 40 organizations, 24 are manufacturing firms and 16 are service organizations. Most of the service organizations are government agencies. Table 14-1 contains the size distribution of the 40 organizations.

TABLE 14-1 Number of Manufacturing and Service Organizations, by Size (Inkson et al. 1970)

Size (employees)	Manufacturing	Service
250–499	8	2
500–999	3	3
1,000–1,999	6	4
2,000–4,999	5	3
Over 5,000	2	4

Definition

In this article the term "structuring of activities" is relevant to formalization. Another article by the researchers (Pugh et al. 1968) indicates that formalization, standardization, specialization, and vertical span are encompassed by "structuring of activities." Formalization is defined there as " . . . the extent to which rules, procedures, instructions, and communications are written (Pugh et al. 1968, p. 75)."

Data Collection

Interviews with chief executive officers were used to collect the information to measure formalization. The part of the interview schedule that asks about the availability of particular documents is relevant:[6]

DOCUMENTATION (FORMALIZATION OF ROLE-DEFINITION)

ARE THE FOLLOWING DOCUMENTS AVAILABLE ?

Obtain copies whenever possible.

The question is whether documents are available irrespective of whether they are actually used. A document is at minimum a single piece of paper with printed, typed, or otherwise reproduced content---not handwritten. Several copies of the same piece of paper may each score as separate documents if used for separate purposes (e.g., organization A may score 3 for unrelated pieces of paper, while organization B may score 3 for a docket of carbon copies each of which is detached for a particular purpose). The problem of a single piece of paper serving separate purposes has not arisen.

DOCUMENTS

Written CONTRACTS OF EMPLOYMENT

(obtain copies for as many grades of employee as possible—for subsequent content analysis for information given above legally required minimum)

INFORMATION BOOKLETS

(an information booklet covers a general topic or topics, such as employment conditions or safety. It is not specific to a particular job, but it can be specific to a topic, e.g., pensions):

Which categories of employee are given booklets?

____

____

____

Total number of different kinds of information booklet is __________

ORGANIZATION CHART[7]

Obtain any chart that is available. Add to it, or if no chart, sketch one, should this be necessary to obtain adequate information.

How much of total organization is included? __________

Copies are given to: ______________________________

____

____

Written OPERATING INSTRUCTIONS available to the direct worker (include instructions attached to equipment) Yes No

Written terms of reference or JOB DESCRIPTIONS for DIRECT 'workers' Yes No

Line (workflow) Superordinates Yes No

Staff (other than line superordinates) Yes No

Chief Executive Yes No

MANUAL OF PROCEDURES (or standing orders) Yes No

Written STATEMENT OF POLICIES (excluding minutes of governing bodies) Yes No

Written WORKFLOW ('production') SCHEDULE or program Yes No

Written RESEARCH PROGRAM (listing intended research work) and/or RESEARCH REPORTS (reporting work done) Yes No

Computation[8]

The following scoring was used for the different documents: Written contract of employment—none = 0, and written contract = 1[9]; information booklets given to—none = 0, few employees = 1, many employees = 2, all employees = 3; Number of information booklets—none = 0, one = 1, two = 2, three = 3, four or more = 4; Organization chart given to—none = 0, chief executive only = 1, chief executive plus one other executive = 2, chief executive plus most or all department heads = 3; Written operating instructions—not available to direct worker = 0, provided = 1; Written terms of reference or job descriptions—for direct workers, not provided = 0, provided = 1; for line (workflow) superordinates, not provided = 0, provided = 1; for staff (other than line supervisors), not provided = 0, provided = 1; for chief executive, not provided = 0, provided = 1; Manual of procedures—none = 0, manual = 1, Written policies—none = 0, written policies = 1; Work flow ("production") schedule or program—none = 0, schedule = 1; Written research program or reports—none = 0, program or reports = 1. The scores were summed, and the larger the score, the greater the formalization. Descriptive statistics, such as means and standard deviations, are not provided.

Validity

Five types of data are relevant to validity. First the short form of the interview schedule was applied to the 52 organizations previously studied by means of the long form. The correlation for structuring of activities for the different forms on the same sample is 0.97. Second, the previous study found a positive relationship between structuring of activities, on the one hand, and size and workflow integration, on the other. The second study of 40 organizations found similar relationships. Third, of the 40 organizations in the second study, 14 were also included in the first study of 52 organizations. The field work for the first and second studies was carried out, respectively, in 1962–1964 and 1967–1968. Sets of scores were thus obtained from a long form and a short form for the same 14 organizations. The product-moment correlations between the two sets of scores is 0.87 for structuring of activities. Fourth, the two studies found the same range of organizational types. Fifth, the researchers, based on their previous study, formulated a development sequence that predicted an increase in the structuring of activities. This increase in structuring occurred in 39 organizations; in one organization structuring remained constant.

Reliability

An item analysis was carried out for the two aspects of context and the two aspects of structure. The general biserial correlation coefficient, originally developed by Brogden (1949), is 0.71 for structuring of activities.

Comments

This research was conducted by the Aston Group, and we have commented positively elsewhere on their large samples. An *N* of 40 is a long way from the case studies of the 1940s and 1950s. The Aston Group (Pugh and Hickson 1976; Pugh and Hinings 1976), Blau (Blau and Schoenherr 1971; Blau 1973), and Woodward (1965) have led the way with large samples of organizations.

Like many researchers, Inkson and his colleagues define formalization in terms of written documents. Since written documents are one way to make explicit the norms of an organization, the definition used by the Aston researchers is consistent with the definition proposed in this handbook. In the Aston research, formalization is not limited to norms, however. "Communication," for instance, is more general than norms.

We seek to promote greater use of documents to measure organizational concepts, and the use of documents by Inkson and his colleagues to study formalization is precisely the type of research we are trying to encourage. We have three concerns with the use of documents in this particular research, however. First, the chief executive officers were mostly *asked* about the *availability* of nine different types of documents throughout the organization. Whenever possible, copies of the documents were obtained. The problem is that individuals at the apex of an organization's authority structure often lack detailed information about the internal operations of the organization, since their efforts are mostly directed to the environment. We would feel more comfortable with asking a number of lower-level managers about the availability of documents; this type of question should not be asked of chief executive officers or top executives generally. These additional interviews would make it more difficult to obtain a large sample, but the extra interviews, in our opinion, would be worth the effort. We do not mind asking executives about the availability of documents. Ideally, the documents themselves should be studied and their use in the organization ascertained. The Aston approach appears, however, to be a viable alternative to the ideal.

Second, the nature of some of the documents is not clear. Organizations have many types of "information booklets," and it is not clear what types of booklets were asked about and collected by Inkson and his colleagues. Again, we have difficulty separating "operating instructions" from "job descriptions." Operating instructions may indicate exactly how a job is to be done, whereas job descriptions may indicate more generally what is to be done and the qualifications of the incumbents. This detail, however, is not specified by the researchers. A final example is the lack of clear differentiation between "operating instructions" and a "manual of procedures." This procedural manual could set forth the "standard operating procedures" of the organization.

Third, other documents commonly used by organizations were not included in the set asked about and collected by the researchers. Examples of excluded documents are organizational histories, descriptions of staff benefits, newspapers, minutes of meetings, personnel evaluations, and written reports to superiors.[10] What is needed is a clearly delineated set of all major documents used by most organizations. This research offers a promising type of data collection for the measurement of formalization, but what is needed is interviews with lower-ranking managers, plus more precision and inclusiveness with respect to the documents asked about and collected.

Basic descriptive data on the mean and standard deviation should have been provided for the index. The Aston researchers usually provide such descriptive information. The information that the researchers provide about validity and reliability is adequate with respect to structuring of activities. Few organizational studies are as careful in these matters. Formalization is but one aspect of structuring of activities, however—the other aspects are standardization, specialization, and vertical span—and separate information is not presented for formalization. Therefore, it is not possible to evaluate the validity and reliability of the measures of formalization. This is a weakness of the research.

Source

Inkson, J.H.K., D.S. Pugh, and D.J. Hickson. 1970. Organization structure and context: An abbreviated replication, *Admin. Sci. Quart.* 15:318–329.

OLDHAM AND HACKMAN (1981)

Description

The concern of this study is how organizational structure influences employee relations. Two competing frameworks were assessed: attraction–selection and job modification. Data were obtained from approximately 2,960 employees working on 428 jobs in 36 organizations located in all geographic sections of the United States and in some sections of Canada. Professional, sales, clerical, and managerial jobs were studied; the jobs were located in government, service, and industrial organizations.

Definition

The concept of interest here is formalization, which is defined as "the extent to which rules, procedures, instructions, and communications are written" (p. 71). Oldham and Hackman consider formalization to be a structural property of an organization, as distinguished from employee reactions.

Data Collection

Five questionnaire items were used to collect information to measure formalization.[11] This statement preceded the five questionnaire items: "To provide a general index of the 'climate' of your organization, please respond to each of the following statements. Write the appropriate number in the blank by each statement, based on the scale below." The scale was as follows:

How accurately does the statement describe your organization?

1	2	3	4	5
Very Inaccurate	Inaccurate	Uncertain	Accurate	Very Accurate

The five questionnaire items came after the scale, as follows: "The organization has a very large number of written rules and policies; A 'rules and procedures' manual exists and is readily available within this organization; There is a complete written job description for most jobs in this organization; The organization keeps a written record of nearly everyone's job performance; There is a formal orientation program for most new members of the organization."

Computation

The above scale indicates the scoring for the five questionnaire items. An index score was created by summing the scores for the five items. The higher the score, the greater the formalization. Neither a mean nor a standard deviation was provided for formalization.

Validity

Two sets of data are relevant for validity. First, there is information pertaining to the relationships between formalization and the three structural properties of size, configuration, and centralization. Size and centralization are discussed elsewhere in this handbook; configuration, which is the number of hierarchical levels in the organization, is a seldom used label. The correlations among the four structural properties range from 0.11 to 0.25, with a median of 0.18 (p. 75), indicating discriminant validity. The complete correlation matrix is not presented.

Second, there are data relating to formalization and satisfaction, the major employee reaction assessed. The six dimensions of satisfaction and their correlations with formalization are as follows: growth (−.12), general (−0.16), social (−0.06), supervisory (−0.11), security (−0.05), and pay (−0.11).[12] Although small, all of the correlations are statistically significant and in agreement with the literature.[13] These data lend some weak support for the construct validity of this measure.

Reliability

The reliability score for the formalization index is 0.52 and is evaluated as "low" by Oldham and Hackman (p. 71). Although it is not clear from the report of the research, the 0.52 appears to be a Cronbach's Alpha.

Comments

We are focusing on formalization, whereas Oldham and Hackman were interested in the more general question of how organizational structure influences employee reactions. We have had difficulty finding a questionnaire measure of formalization and have selected the Oldham and Hackman measure despite the fact that the assessment of formalization is a minor feature of their work. The comments that follow should be read with this in mind.

The Aston definition of formalization is used (Pugh et al. 1968). This definition is consistent with our own, since written records are one way to make explicit the norms of the organization. As previously indicated, however, the Aston definition of formalization is more general than ours.

Three comments are necessary regarding data collection. First, information about formalization (as well as size, configuration, and centralization) was provided by a single informant in each organization.

These informants (an *N* of 36) were typically personnel directors or presidents. Although personnel directors are generally knowledgeable about the internal workings of organizations, it is best to measure formalization, and other structural properties, with data from a sample of all employees. We do not have much confidence in the ability of presidents to describe the internal workings of organizations, since their focus is mostly on the environment. The researchers do not indicate their relative dependence on personnel directors and presidents as informants.

Second, the fifth item does not appear relevant for formalization, since it makes no reference to written documents. A "formal orientation program for most new members" means, to us, a program officially sponsored by the organization. The remaining four questionnaire items refer, either explicitly or implicitly, to written documents. Third, the six measures of satisfaction come from the Job Diagnostic Survey (JDS) developed by Hackman and Oldham (1975). These measures are widely used, as are the other components of the JDS. Were we to study satisfaction, however, we would use the measures described in Chapter 26 of this handbook.

Three comments are relevant concerning the calculations. First, means and standard deviations are not provided for any of the concepts examined, making comparisons with other uses of the measures difficult. Second, although it is not critical, it would have been helpful to have had the full correlation matrix for the four structural properties (formalization, size, configuration, and centralization). We would have liked to examine the correlations for formalization. Third, the type of reliability coefficient estimated for formalization is not explained, which again makes comparisons with other studies difficult.

Let us close the description of this selection by noting again that measurement of formalization was not the main thrust of this study. We are interested in the measurement of formalization and examined the Oldham and Hackman research totally from this perspective. We have ignored their main concern—how organizational structure influences employee reactions—in favor of our main concern. Researchers cannot be criticized for something they were not trying to do, and the preceding comments must be viewed in this context.

Source

Oldham, G.R., and J.R. Hackman. 1981. Relationships between organizational structure and employee reactions: Comparing alternative frameworks, *Admin. Sci. Quart.* 26:66–83.

NOTES

1. A large number of organizational scholars define formalization in terms of written records. See, for instance, the work of the Aston Group (Child 1972; Pugh et al. 1968).

2. The meaning of "written" may ultimately have to be extended to cover computer tapes, word processors, and cassettes. We have found, for example, that computer files often contain the type of data that used to be found in traditional records. The written records still exist, but the computer files are a new form of "written" record.

3. Additional material on formalization is to be found in Parsons's discussion of the pattern variables; the pertinent dimension is specificity–diffuseness. Explicitly formulated norms are, in Parsons's terms, specific. A helpful discussion of the pattern variables is found in Johnson (1960, pp. 135–141).

4. The relevant dimension of complexity is the division of labor.

5. The 1972 edition of the handbook (pp. 108–111) contains a discussion of the Hage and Aiken measure.

6. The interview schedule is supplied through the courtesy of D.J. Hickson. For the sake of clarity, the part of the interview schedule that is relevant to formalization is slightly simplified. Nothing essential has been removed from the schedule.

7. Information about organizational charts is introduced at this point from another part of the interview schedule.

8. The scoring instructions are not contained in the source article; they accompany the interview schedule supplied by Hickson. The scoring instructions and schedule are separate documents.

9. The original version of the interview schedule does not contain none = 0 or written contract = 1.

10. Written reports to supervisors appear to be different from the "written research program or reports" contained in the interview schedule.

11. The information in this section was graciously provided by Professor G.R. Oldham. It should be noted that the five questionnaire items do not constitute a separate set of items, but are distributed among a set of 14 questions. The 14 questions are lettered a through n; the five items for formalization are e, h, k, m, and n.

12. These correlations are found on p. 75.

13. Oldham and Hackman do not indicate that their findings are consistent with the literature; the consistency interpretation is ours.

15

GENERAL TRAINING

Definition

General training is the degree to which the skills and knowledge of an individual can increase the productivity of different organizations.[1] Professional training, as an illustration, typically equips an individual to work in different organizations. Consider the diverse organizational settings in which physicians and nurses can work: hospitals, clinics, schools, businesses, nursing homes, government agencies, and so forth.[2] Craftsmen obtain much the same type of training as professionals; an electrician can, for example, obtain work from a wide variety of employers. "On-the-job" training, on the other hand, typically is quite organization specific. A "diploma nurse" trained on the job in a hospital has more hospital-specific knowledge and skills than a "baccalaureate nurse," who is trained in a university. As another example, an individual trained to operate cruise missiles in the U.S. Air Force and Navy has knowledge and skills limited only to the U.S. Air Force and Navy. General training is usually contrasted with specific training; the diploma nurse and cruise missile technician are said to have high levels of specific training.

The idea of general training comes from the human capital tradition in economics, where it is used in the study of human resources and economic development. Investments in the knowledge, skills, and health of people, all referred to as human capital, are required for economic development just as much as investments in physical capital such as plant and equipment. Economists also use general training as a variable in the explanation of turnover (Parsons 1972; Pencavel 1970). It is employers who mostly invest in specific training, and to protect their investment they increase the pay of the employees who have received the specific training; the increased pay in turn reduces turnover. Since general training is mostly invested in by employees, employers do not have the economic incentive to increase the pay of these employees, and thus they will exhibit more turnover. The labor market also provides more opportunities for generally trained employees, further increasing their turnover. The concept of general training is also used in the study of income inequality (Mincer 1974).

General training is not used very often in the study of organizations, but the concept is included in this handbook to promote and encourage its use. Since turnover is an important organizational concern, general training should be used in explanations of employee separations. [3] General training may also be relevant to the study of the impact of turnover on organizations. Where employee turnover is high, for instance, employers may be less willing to invest in either general or specific human capital. [4]

Income inequality, like turnover, is typically viewed within a societal context. Organizational scholars should also be interested in income inequality within their domain. Chapter 21 of this handbook discusses income inequality under the label of Pay Stratification. General training, since it is an investment in human capital, is also an important determinant of productivity (Fabricant 1969; Kendrick 1977), a topic which is examined in Chapter 24.

We mostly seek to represent accurately the field of organizational studies. Where changes are needed to move the field ahead, however—to develop better theory, for instance—we are less concerned with being representative. General training is an instance where we assign priority to moving the field ahead rather than being representative.

Measurement

Our experience in the measurement of general training may be instructive. We have long sought to use general training in the study of turnover. When beginning a study of nursing turnover in 1975 we sought a measure of general–specific training for registered nurses. An examination of the literature indicated that economists typically measure general training by education, various types of work experience, and income. [5] A variation of the education measure seemed appropriate for our research. Registered nurses who had been trained in colleges and universities—baccalaureate nurses—were assigned scores indicating the most general training. Registered nurses who had been trained in hospitals—diploma nurses—were assigned scores indicating the most specific training. Registered nurses trained in community colleges—associate nurses—were assigned scores midway between the baccalaureate and diploma nurses. Some construct validity was indicated, since turnover was greater among nurses with baccalaureate training, that is, among those with the most general training (Price and Mueller 1981, pp. 53–69).

A measurement problem was encountered, however, when we later sought to study the turnover of all hospital employees, rather than just registered nurses. Since we needed a measure applicable to all employees, type of nursing training was not workable. A reexamination of the measures commonly used by economists, such as education, variations of work experience, and income, also revealed some serious problems. These measures seemed to lack validity in an organizational context. Amount of education, for instance, appeared to capture many concepts in addition to the level of general and specific training. Well-educated employees seemed to have more rewards, such as money, prestige, and power, than less-educated employees, and more rewards are believed to reduce turnover. Education may validly measure general and specific training in a large, modern society, but it seemed to possess much less validity in an organization. We therefore designed three questionnaire measures of general training and used them to study all hospital employees. The results were not satisfactory, however. Since the three items did not factor together, a single item was used; it was not a significant determinant of employee turnover in hospitals (Price and Mueller 1986).

We have designed another questionnaire measure of general training, which is suggested below. Since this measure has not yet been used to study turnover, no data are available about its validity and reliability. Our preference is to use only published measures, but when we can locate no measure, we will in some instances suggest measures. Our hope is that this will encourage additional research.

ADDITIONAL MEASUREMENT SUGGESTIONS

The index contains four items: (1) To what extent does your job depend on knowledge and skills learned by *experience* as contrasted with knowledge and skills learned in *formal schooling*? (2) To what extent do the knowledge and skills of your job permit you to be employed by a *great many different types* of work organizations as contrasted with permitting you to be employed by a *very narrow range* of work organizations? (3) Does your job mostly depend on knowledge and skills to work with *specific individuals* or mostly knowledge and skills to perform *general work techniques* applicable to a great many different types of organizations? (4) To what extent does performance of your job depend on knowledge and skills related to *general work techniques* as contrasted with knowledge and skills pertaining to specific rules and regulations applicable to a *very narrow range* of work organizations?

There are five responses to each of the four items. (1) Job depends almost totally on experience, depends mostly on experience, depends about half on experience and about half on schooling, depends mostly on formal schooling, job depends almost totally on formal schooling. (2) Knowledge and skills can be used by a great many types of work organizations, by many types, by quite a few types, by a few types, knowledge and skills can be used by a narrow range or work organizations. (3) Job almost totally depends on knowledge and skills to work with specific individuals, job mostly depends on working with specific individuals, about half with specific individuals and about half on general work techniques, job mostly depends on performance of general work techniques, job almost totally depends on performance of general work techniques. (4) Performance depends almost totally on general work techniques, performance depends mostly on general work techniques, about half on general work techniques and about half on specific organizational rules and regulations, performance depends mostly on specific organizational rules and regulations, performance depends almost totally on knowledge and skills pertaining to specific organizational rules and regulations.

Response-set bias is minimized if the exact sequence of the questions is maintained. The first and third questions focus on specific training and then general training, whereas the second and fourth questions list general training before specific training.

The scoring for the five responses to each of the four questions is as follows: (1) 1, 2, 3, 4, 5. (2) 5, 4, 3, 2, 1. (3) 1, 2, 3, 4, 5. (4) 5, 4, 3, 2, 1. High scores are assigned to the response indicating the most general training. When the scores are summed, the higher scores indicate greater general training. The range of the index extends from four through 20.

A validation strategy for the index may be suggested. Since the index approaches the measurement of general training through the knowledge and skills necessary to perform jobs, and since each employee of the organization has a job, employees who have detailed information about the occupational structure of the organization may be interviewed. Consider the first question, for instance. Each job in the organization might be ranked by these informed employees according to the extent to which the job depends on experience and formal schooling. A three-point ranking would be sufficient. The remaining three questions could be checked in the same manner. Several employees would probably have to be interviewed, and it is likely that records would also have to be examined to perform the rankings. Individuals with detailed occupational information will probably be found in the personnel department. It is also probable, however, that such individuals will have to contact other individuals in the organization for information about some of the jobs. Some supervisors, for instance, will no doubt have to be contacted for occupational information. Collection of this information should permit validation of the suggested questionnaire measure of general training; the questionnaire data can be compared with data obtained from interviews with individuals knowledgeable about the occupational system.

NOTES

1. This definition is based on the work of Becker (1962; 1964, pp. 7–36).

2. There are considerable differences in the degree of general training among the professions. Physicians, for example, will be more generally trained than lawyers.

3. For an example see Price and Mueller (1981).

4. This idea was suggested to us by material about Japanese organizations (Ouchi 1981; Pascale and Athos 1981).

5. Some relevant data are the following: Barnes and Jones (1974); Burton and Parker (1969); Mincer (1974); Pencavel (1970); Rees (1973); Sandell and Shapiro (1978).

16

IDEOLOGY

Definition

An ideology is a set of beliefs expressed publicly with the manifest purpose of influencing the orientations and actions of others.[1] The "theology" of the Roman Catholic Church and "Marxism-Leninism" of the Communist Party of the U.S.S.R. are illustrations of ideology.[2] Central to ideology is a conception of the organization and its place in society.[3] There certainly is more to theology and Marxism-Leninism than conceptions of the Roman Catholic Church and the Communist Party, yet both ideologies have conceptions of the organizations and their place in the society. Material about ideology is found in discussions of "sagas," "philosophy," and "corporate culture."

There is currently little interest in ideology among organizational scholars. Selznick and his colleagues (Clark 1960, 1970; Selznick, 1953) have made extensive use of the concept (The Tennessee Valley Authority's ideology of "grass-roots administration" is famous in the literature), but their work has not been extended,[4] nor are there any equivalents of Selznick and his colleagues now doing organizational research on ideology.

Under the labels of "philosophy" and "corporate culture," however, there is presently considerable interest in ideology in the popular organizational literature dealing with Japanese organizations (Ouchi, 1981; Pascale and Athos, 1981) and effectiveness (Peters and Waterman, 1982). It is this popular organizational literature that has helped to remind us of the historical importance of ideology. We mostly seek to represent accurately the field of organizational studies. When an important topic is not sufficiently emphasized, however, as is the case with ideology, accurate representation of the field is less of a concern. We believe ideology should be given more attention, so it is included in this handbook.

Measurement

We are impressed by the work of Selznick and his colleagues in the area of ideology. Selznick's *TVA and the Grass Roots* (1953) is one of the truly seminal studies of organizations, and one of us has sought to extend Selznick's ideas (Price, 1968a, pp. 95–135). What is also impressive, however, is that Selznick and his colleagues, despite their concern with ideology for many years, never developed a measure of the concept. Based on their considerable acquaintance with the organizations they studied, derived mostly from intensive field work, they formed impressions of the content of the ideologies of the organizations. The impressions, though probably quite accurate, were never systematically checked by a measure. A questionnaire index is suggested to remedy this deficiency. Most of the items in the index come from, or were suggested by, a study of the popular organizational literature previously cited.

ADDITIONAL MEASUREMENT SUGGESTIONS

The core of the index is a set of 11 descriptive statements. Preceding the 11 statements is the sentence: "To what extent do the following statements *accurately describe* the organization for which you work?"[5] The 11 statements are as follows: It "stands for" something distinctive in society; It has definite ideas about how things should be done; It produces a very special kind of employee; It has a distinctive mission in society; It is very much concerned with tradition; It has a clear view about how to achieve goals; Stories are often told within it about accomplishments of its past employees; It has its own song; Its trademark is a special style of management; It has a clear vision of its role in society; Sayings are often told within it which embody organizational wisdom.

Each of the 11 statements has five responses: very accurate, quite accurate, somewhat accurate, very little accuracy, and not accurate at all. Scoring ranges from five to one, with "very accurate" scored as five and "not accurate at all" scored as one. The scores are summed such that the higher score indicates a strong ideology (such as one would find for the theology of the Roman Catholic Church or for Marxism-Leninism in the Communist Party of the U.S.S.R.). The range of the index is from 11 to 55.

The proposed index has not been used, so we can offer no data regarding its validity or reliability. Our hope is that publication of the index will stimulate research.

NOTES

1. This definition is based on the work of Sutton and his colleagues (1956, pp. 1–15). Sutton was a student of Parsons, and his view of ideology is drawn from Parsons's idea of culture. A helpful discussion of the Parsonian idea of culture is found in Johnson (1960, pp. 82–109). Also relevant is the work of Geertz (1964), who is another student of Parsons.

2. Writers in the Marxist tradition have evidenced a major concern with ideology, with Mannheim's *Ideology and Utopia* (1936) being the first major sociological work dealing with ideology in this tradition. This Marxist tradition, however, has had little impact on the work of Parsons and his students.

3. Our conception of ideology is more general than the view advanced by Bendix in his widely cited study of managerial ideology (1956, p. 2). However, our conception of the organization and its place in society includes Bendix's concern with a justification of the organization's system of authority.

4. Selznick and his colleagues are more sensitive to the Marxist tradition than Parsons and his students. Selznick was a student of Merton, whose work, especially his writings on the sociology of knowledge (1957, pp. 439–508), is influenced by the Marxist tradition. Merton's lectures on Marx have also long been famous at Columbia.

5. The name of the organization studied could naturally be substituted for "the organization."

17

INNOVATION

Definition

Innovation is the degree to which changes are intentionally implemented that are new to the organization.[1] Three aspects of this definition require emphasis. First, the idea of "degree" is included to explore the depth of innovation. Some organizations innovate throughout the system, whereas others innovate partially; the idea of degree is included to distinguish these types of organizations. The organization that hires a few very visible blacks ("tokens") must be distinguished from the organization that recruits many black employees at all levels of the organization.

Second, innovation is a less general concept than organizational change; the idea of "intentional" change conveys this distinction. Only change that is intentionally implemented is innovation. Third, the production of "new ideas" is not innovation; ideas must be implemented for innovation to occur. A research and development unit, for instance, is evaluated not by its production of books and articles, which are likely to contain the new ideas, but by the extent to which new processes and products are introduced by the organization.

Administrative innovation is distinguished from technological innovation.[2] The earlier discussion of administrative intensity distinguished management of output from direct production of output. Administrative innovation involves changes in management, whereas technological innovation involves changes in production. Changes in decision-making, coordinating, and controlling are illustrations of administrative innovation, whereas changes in the process of production or the product are illustrations of technological innovation. This distinction represents a dimensional approach to innovation based on the assumption that the determinants and impacts of these types of innovation may be different.

Measurement

The measurement of innovation has been approached primarily through study of specific innovations, but also through asking employees about their willingness to innovate (Price 1972b, pp. 118–128). Data about specific innovations has been collected by interviews, questionnaires, observations, and documents. Asking employees about their willingness to innovate results in general measures of innovation, and such information is easily obtained from interviews and questionnaires.

The first selection, by Lewis–Beck (1977), takes the general approach to the measurement of innovation. Rather than assess willingness to innovate, however, Lewis–Beck used informed observers to report on innovation. While not novel, this approach represents a relatively little-used strategy to measure innovation.

The second selection, by Moch and Morse (1977), takes the specific approach to the measurement of innovation. In this case, questionnaires were used to study hospital innovations. This approach does not yield standardized and general measures, but it can be combined with a revised Lewis–Beck approach to produce such measures.

We will suggest a two-element strategy for measuring of innovation. First the Lewis–Beck approach of asking informed observers to report on innovations is adopted. We elaborate on his procedures, however, and introduce the distinction between administrative and technological innovation. The first element of the strategy should yield a general and standard measure of innovation. Second, the basic approach of Moch and Morse, studying specific organizational innovations, is used to assess the validity and reliability of the general and standardized measure yielded by the first element of our strategy. Although Moch and Morse used questionnaires to collect their data, validity and reliability can be assessed by records and observations. What is critical is assessing the general measure with specific data; the exact procedure used to collect the specific data is less important. The recommended strategy thus builds upon the work reported in the first two selections.

LEWIS–BECK (1977)

Description

This study focuses on the impact of influence equalization on organization innovation. The organizations sampled for analysis were 32 hospitals, predominantly public ones, representing all the hospitals in Peru. Interviews were conducted in 1972 with a probability sample of health professionals (95 percent of whom were directors, doctors, or nurses) in each of the 32 hospitals. Of those eligible, 94 percent were interviewed, for a total of 543 interviews. Public hospitals are in the majority in Peru, containing 85 percent of the nation's hospital beds.

Definition

Innovation is defined as "the adoption of new procedures, practices, and equipment by the hospital" (p. 2). This conceptualization is influenced by the work of Mohr (1969).

Data Collection[3]

Three Likert-type items were used to assess the innovativeness of the hospitals: "This hospital is a little behind in utilizing the most adequate equipment and medicines; The hospital has not introduced any new methods and techniques of patient care; This hospital is very behind in the application of new administrative techniques to the work of admitting, maintaining, and releasing patients." Each question had a five-point "strongly agree" to "strongly disagree" response format.

Calculation

Each item was scored from five for "strongly agree" to one for "strongly disagree." The larger the score, the greater the innovation reported by the respondent. Within a hospital, individual scores on an item were averaged and then summed across the three items to give the hospital an innovation score. The mean innovation score is 9.29, the standard deviation is 1.78, and the range is 5.48 to 12.50 (p. 4).

Validity

Two sets of data are pertinent for assessing validity. First, as expected, and supportive of construct validity, equalization of influence over decisions was especially likely to lead to adoption of innovations when the hospitals had relatively ample resources at their disposal. Second, the measure of innovation has a high positive correlation ($r = 0.62$) with modernity of the regions of the country. The three basic regions of Peru are commonly ranked, with regard to modernity, in ascending order from the Andes to the coast to the capital, Lima. This data about modernity argues for criterion-related validity of the measure of innovation.

Reliability

No data are provided about reliability.

Comments

There is discussion in the organizational literature concerning the extent to which findings from developed nations can be applied to developing nations.[4] Lewis–Beck's Peruvian sample suggests a positive response to this question and is thus a welcome addition to the literature.

The definition by Lewis–Beck is basically the same as ours. This is not surprising, since the work of Mohr (1969) is important for Lewis–Beck and for us. Although he does not make the distinction, it is interesting to note that Lewis–Beck's first two questionnaire items assess technological innovation, whereas his third item measures administrative innovation.

Two points are important regarding data collection. First, we are intrigued by Lewis–Beck's interview strategy for measuring innovation. He used what is, from our perspective, the obvious but neglected strategy to measure innovation; he asked informed observers to report on innovation. It is also important to stress that Lewis–Beck asked a number of respondents from each hospital to report on innovation; the average number of informants per hospital is slightly over 16 (543/32). Researchers (Seidler 1974) have stressed the importance of using a number of informants to collect valid and reliable data. Second, response-set bias may be a problem with Lewis–Beck's questions, since all of them are stated negatively. Future research with this type of question should randomly order both positive and negative items.

We appreciate the provision of descriptive statistics. Too often these basic data are not provided in research reports. Although not extensive, the evidence supports the validity of Lewis–Beck's measure of innovation. Conclusions about the measure, however, would have been facilitated by the provision of data about reliability.

Source

Lewis–Beck, M. 1977. Influence equality and organizational innovation in a third-world nation: An additive–nonadditive model, *Amer. J. Pol. Sci.* 21:1–11.

MOCH AND MORSE (1977)

Description

This study investigates the structural determinants of innovation in organizations. The sample for the study was 485 propietary, voluntary, and local public hospitals in the United States. No federal hospitals were included.

Definition

Medical and administrative innovations are the dimensions of innovation investigated. Neither of these two dimensions, nor innovation itself, is explicitly defined.

Data Collection

Data about medical and administrative innovations were collected by questionnaires mailed to the chief medical officer and chief administrative officer of each hospital. The use of 12 new technologies for the treatment of respiratory disease is the measure of medical innovation. Selection of these 12 new technologies was made in consultation with experts in the area. Adoption of Electronic Data Processing (EDP) is the measure of administrative innovation. EDP could be used by the hospitals for eight functions: accounting, admissions, discharges, personnel records, payroll, medical records, research, and patient care. The questionnaire items used to collect the data about respiratory disease and EDP are not reproduced in the article.

Calculation

Each of the 12 new technologies for the treatment of respiratory disease was scored for adoption or nonadoption. The greater the number of adoptions by a hospital, the higher its score on medical innovation. The greater the number of functions performed by EDP, the higher the score of the hospital on administrative innovation. Means and standard deviations are not provided for the measures of medical innovation and administrative innovation.

Validity

Two sets of data are relevant for validity. First, when visiting the hospitals, the researchers asked the chief administrative officers for record-based data to check the adoption of the 12 new technologies. The researchers appear to have been satisfied with the responses of the chief administrative officers to these requests for record-based data. No requests appear to have been made for comparable data about EDP, the measure of administrative innovation. Second, based on a review of the literature, a theoretical model of innovation is estimated. Size, specialization, differentiation, and centralization are critical determinants in the model. Most of the findings are in agreement with expectations. Adoption of innovations compatible with the interests of lower-level decision-makers, such as department heads, occurs more frequently in large, specialized, differentiated, and decentralized hospitals. Centralization does not appear to influence adoption of innovations that are not compatible with the interests of lower-level decision-makers. Contrary to expectations, however, the findings indicate that differentiation facilitates the adoption of innovations that are not compatible with the interests of lower-level decision-makers. The findings thus basically support construct validity for the measures of medical and administrative innovation.

Reliability

The reliability of the measure is assessed in two ways. First, both the chief medical officer and the chief administrative officer were asked about the adoption or nonadoption of the 12 new technologies for the treatment of respiratory disease.[5] The product-moment correlation between the adoption measures based on these two reports is 0.78 (p. 720). In reporting the same event, these two chief executives thus mostly agreed with each other. A comparative measure of reliability is not reported for EDP.[6] Second, the researchers visited 16 hospitals to determine for themselves whether or not the 12 new technologies were adopted. The correlations between data collected by the researchers and the reports of the chief medical officers and the chief administrative officers are 0.86 and 0.75 respectively (p. 720). Again, comparable data are not reported for the measure of administrative innovation (EDP).

Comments

Moch and Morse are to be commended for their *N* of 450. Even the Aston Group and Blau do not have *N*s this large. The researchers should have explicitly defined innovation and its dimensions. It is not too difficult to abstract the implied definitions of medical and administrative innovation from the examples described, but definition should not be the responsibility of the reader. Medical and administrative innovation seem to correspond, respectively, to our technological and administrative innovation. It is more difficult to abstract a definition of innovation from the examples, since different definitions are compatible with the descriptive material. Use of the two dimensions is excellent, since the determinants of medical innovation may be different from the determinants of administrative innovation.

As indicated elsewhere in the handbook, we are concerned about collecting data from high officials regarding internal operations of the organization. Since they are often primarily oriented to the environment, these high officials (especially the chief executive officers) are likely to be relatively uninformed about detailed internal operations. In this study, there is the additional problem of bias with respect to innovation. High officials will have an incentive to overreport the use of these types of innovations in order to demonstrate that they are managing "good hospitals." On the other hand, Moch and Morse asked the chief medical officers and the chief administrative officers to report on activities that they should know about. The chief medical officers should know about major innovations regarding respiratory disease, and the chief administrative officers should know about major innovations regarding EDP. Much to their credit, the researchers also checked the accuracy of the reports about medical innovation by visiting 16 hospitals. Information based on records was also obtained during these visits, an important additional way to assess validity. It would have been even better for the 16 hospitals to have been selected randomly and for checks to have also been made regarding EDP. Random selection, however, would probably have been very expensive. In short, we have no major concerns with data collection in this study; we especially applaud the visits to the 16 hospitals.

The researchers do not reproduce their instrument. This would be especially helpful for EDP, since most of the eight functions described could be partially computerized. It would be instructive to examine the questionnaire items for EDP to see how carefully the issue of degree of computerization was examined. Without the instrument, other researchers cannot replicate this study. We are well aware, however, of editorial constraints on the reproduction of instruments and will treat this issue in the concluding chapter.

The scoring, especially for medical innovation, is not clear and descriptive statistics are not provided. Five comments are pertinent regarding validity and reliability. First, there is the issue of the extent to which innovations regarding the treatment of respiratory disease are representative of general medical innovation. The treatment of respiratory disease is but one part of the medical technology of a hospital. Moch and Morse have made a good case for convergent and construct validity of their measure of innovations regarding the treatment of respiratory disease; they do not, however, address the issue of representativeness. Second, there is the issue of the extent to which medical innovation is representative of general hospital innovation. In addition to medical innovations, hospitals also innovate in the area of nursing technology. A study of technological innovation in hospitals, to use our terminology, must examine both medical and nursing innovation. These researchers do not mention nursing innovations. Third, there is the extent to which innovations regarding the treatment of respiratory disease are representative of a general concept of organizational innovation. This issue should be addressed. These three comments reflect a general lack of conceptual precision in the article.

Fourth, Moch and Morse carefully checked the validity of the measure of medical innovation by visiting 16 hospitals. Since no comparable check was made for administrative innovation (EDP), its validity cannot be assessed. Fifth, the researchers provide data supportive of the reliability of the measure.

Source

Moch, M.K., and E.V. Morse. 1977. Size, centralization and organizational adoption of innovations, *Am. Sociol. Rev.* 42:716–725.

ADDITIONAL MEASUREMENT SUGGESTIONS

We will propose a strategy using both general and specific measures of innovation. First consider the general measures. Although either questionnaires or interviews can be used to collect these data, we will assume the use of questionnaires. This part of the proposed strategy is stimulated by the study of innovation by Lewis–Beck.

Technological and administrative innovation should first be defined and illustrated for the respondents, with both the definitions and the illustrations being brief. It probably is not necessary to define the general concept of innovation for respondents, because it will be implied in the material about technological and administrative innovation.

A set of global questions should be constructed for technological and administrative innovation. Four points are essential with regard to these questions. First, the questions should be asked of all employees. Questioning all employees will assess the extensiveness of innovations and avoid the possible bias of asking major administrators about the degree to which the organizations they direct are progressive. It is difficult for many administrators to say that their organizations are not innovative, since to be innovative is to be progressive. Second, the questions should focus on "minor," "major," and "neither minor nor major" innovations. There will naturally be some looseness in respondents' interpretation of these terms, but it is necessary to make an attempt to assess, however crudely, the degree to which the organization is modified by the innovations.

Third, the questions should be stated positively and negatively and the sequencing of the items should be random. Fourth, the global format means that questions will not be asked about specific innovations. The goal is to have a measure of innovation that can be used in any organization. The global format is used extensively in the study of satisfaction, so it should be applicable to innovation. We have not attempted to construct this set of global questions, so no examples can be provided.

The only scoring issue to be addressed is whether or not different weights should be assigned for "minor," "major," and "neither minor nor major" innovations. Although it seems logical to assign more weight to major than to minor innovations, research will have to be undertaken to determine the implications of weighting.

The second part of the suggested strategy is using specific measures to check the validity of global measures of innovation. This part of the strategy is stimulated by the study of innovation by Moch and Morse. Moch and Morse collected their hospital-specific data by questionnaires, a procedure that is perfectly agreeable to us. Specific data could also be collected, however, from records and from observations. The exact procedure used is not the issue; what is critical is checking the *general* data with information about *specific* innovations. The general and specific data should naturally be collected from the same hospitals.

The goal is to obtain a valid and reliable set of general measures of innovation. We are suggesting that to do so it will be necessary to check the general measure with specific data from different types of organizations. It will also be necessary to use different types of specific data (questionnaires, records, and observations) to check the general data. We accept the necessity of some relatively specific measures (an example is effectiveness) but if at all possible we prefer to obtain standardized general measures.

NOTES

1. This definition is based on the work of Mohr. See, for example, Mohr (1969) and Downs and Mohr (1976).

2. We first encountered this distinction in the work of Evan. See, for example, Evan and Black (1967).

3. Data in this section was supplied by Michael Lewis−Beck.

4. Lewis−Beck cites some of this literature in his articles.

5. It is not clear from the report if both the chief medical officer and the chief administrative officer were also asked about the adoption of Electronic Data Processing (EDP).

6. This lack of information leads us to believe that the chief medical officer and the chief administrative officer were not both asked about the adoption of EDP.

18

MECHANIZATION

Definition

Mechanization is the degree to which an organization uses inanimate energy in its operations.[1] Common examples of mechanization are computers, electric typewriters, power tools, robots, motors, machines, cranes, and forklifts. Mechanization is generally examined in discussions of technology, but we discuss technology by considering separately the concepts of complexity, departmentalization, mechanization, routinization, and standardization. These, of course, are not the only topics under which technology is examined by organizational scholars, but our view is that these five concepts will capture most of what is meant by technology.

Two points about this definition require emphasis. First, mechanization refers both to the production system and to the management system of an organization. Since production is the most important part of an organization, studies of mechanization commonly focus on the production system. We think it is also important to study mechanization of the organization's system of decision-making, coordination, and control—the management system. The definition thus refers to "operations" rather than to just production or management.

Second, the use of tools and equipment is not mechanization.[2] A horse-drawn plow, for example, is not mechanization because the energy source is the horse, which is animate. Use of a tractor to plow a field is an example of mechanization, however, because its source of energy is a gasoline or diesel engine, which is inanimate. It is only when the tools and equipment depend on inanimate sources of energy (and the particular source is not important) that they are discussed in the context of mechanization.

Measurement[3]

Organizational scholars have spent little time in the measurement of mechanization.[4] The common practice is to select a measure and use it in the analysis, with little effort given to assessing the validity and reliability of the measure or to discussing how the data were collected for the measure. This chapter therefore will not present a selection from the literature, but rather will discuss what appears to be a viable measure of mechanization.

Mechanization is often measured by the amount of electricity consumed per employee (Marsh and Mannari 1976, p. 109); consumption is usually expressed in kilowatt hours. The Marsh and Mannari measure is probably a fairly valid indicator of mechanization, since most of the tools and equipment of an organization are driven by electricity. Although the source of the electricity varies (coal and oil are the most common sources), it is electricity that finally drives the tools and equipment. Organizations, however, use a sizable amount of inanimate energy that cannot be measured in kilowatt hours of electricity consumed. For example, many of the tools and equipment driven by motors, though making use of electricity, do not depend on electricity for their driving force, as, for example, does a computer. Therefore, we do not know the extent to which the inanimate energy used by the typical organization is reflected accurately in its consumption of electricity.

The Marsh and Mannari measure is a general measure, since it refers to "employees" rather than to "production employees." Some measures of mechanization examine only electricity consumed by production employees, with no rationale given for this focus (Melman 1958, pp. 152–196). An examination of electricity consumption that restricts itself to production employees ignores the use of mechanization by managerial employees of an organization and is thus clearly inferior to the Marsh and Mannari measure. As previously indicated, mechanization refers to both the production system and the management system of an organization, and a valid measure of mechanization thus must include the amount of electricity consumed by employees from both of these systems.[5]

The Marsh and Mannari measure also refers to amount of electricity consumed per employee, rather than to "installed horsepower" per employee (Melman 1956).[6] Although installed horsepower can be translated into kilowatt hours (Price 1972b, p. 135), it is probably best to use the

Marsh and Mannari approach. There is little reason to translate the commonly used kilowatt hours into the less-commonly used installed horsepower. Jerome (1934) and Thorp (1929) have also severely criticized installed horsepower as a measure of mechanization.

We have sought to use records as much as possible as sources of data for our measures. The amount of electricity consumed per employee will most likely be available from the utility bills paid by the organization. The amount is also probably expressed in kilowatt hours. Since the organization knows its number of employees, it is a relatively simple matter to compute amount of electricity consumed per employee.[7] There seems to be little reason to measure mechanization with data collected by interviews, questionnaires, or observations, since the data is readily available in records. It would be appropriate, however, to use interview or questionnaire data to assess the validity of a record-based measure of mechanization.

NOTES

1. This definition of mechanization comes basically from Faunce (1968, pp. 42–44), who refers to "power" rather than to "energy."

2. Quite a few scholars include tools and equipment as part of mechanization (Jerome 1934, pp. 41–42; Landes 1969, pp. 41–123). Inclusion or nonexclusion of these as part of mechanization is probably not a major issue, since most of the tools and equipment in contemporary organizations use inanimate energy for their operation.

3. Jerome (1934) has a helpful discussion of the measurement of mechanization.

4. One clear exception to this generalization is the impressive work of the Aston Group. See, for example, Inkson et al. (1970).

5. One reason for possibly excluding managerial employees from calculation of the amount of electricity consumed is that many of them, at least historically, used little inanimate energy in the performance of their work. Administrators in contemporary organizations, however, commonly make use of mechanization, such as computers, as do clerical, secretarial, professional, and maintenance employees.

6. Melman refers to installed horsepower per "wage-earner." His measure is thus restricted to the production system, since this is where most "wage-earners" are located.

7. Counting the number of employees is not without problem. These and other issues in the measurement of size are discussed in Chapter 27 of this handbook.

19

MOTIVATION

Definition

Motivation is the degree to which the members of an organization are willing to work (Robinson et al. 1969, p. 79). Individuals willing to work hard are highly motivated, whereas individuals without this willingness are lowly motivated. Both the label and the concept come from the psychology research on achievement motivation in the McClelland–Atkinson tradition (Helmreich and Spence 1978; Mehrabian and Bank 1978).

Motivation is not the same as behavior. An individual who states a willingness to work may not work hard; he/she may not, in other words, exert much effort in job performance. It is generally assumed, however, that motivation and behavior are highly correlated, an assumption so widespread that motivation and behavior are often not distinguished. This link with behavior, which likely is not spurious, makes motivation pertinent to such classic organizational concerns as "soldiering," "restriction of output," and "goldbricking." These classic organizational concerns refer to behavior rather than to psychological orientation. The more recent concern with another behavioral concept, "manufacturing consent" (Burawoy 1979), is also relevant to discussions of motivation.

Motivation should also be distinguished from three other psychological concepts covered in this handbook: commitment, need strength, and satisfaction (Chapters 6, 20, and 26, respectively). Employees who are willing to work may or may not be loyal to the organization. Although motivation and commitment are commonly distinguished, there is not much evidence directly supporting this conceptual distinction. The two concepts are generally studied by researchers working in different traditions, who seldom attempt to relate their work to research in other traditions.

Professionalism is sometimes viewed as dedication to occupational standards of performance (Price and Mueller 1981, pp. 19–20). This is not the way professionalism is usually conceptualized in the literature, but it does identify an important element in the study of professional orientations. We now see that this view of professionalism is captured in the concept of motivation. "Intrinsic job motivation," in the second selection of this chapter, by Warr and his colleagues (1979), corresponds exactly to professionalism viewed as dedication to occupational standards of performance. Since motivation is used widely, and this particular view of professionalism is not dominant, it is best to use the label "motivation." To exclude this component of professionalism does not, of course, require exclusion of other aspects of professionalism that are of concern to organizational scholars.

Some comments about alienation and Marx are in order. Kanungo's review (1982) suggests that alienation and involvement refer to the same concept, with the difference being that the labels identify the two extremes of a continuum; alienation refers to the negative end of the continuum, and involvement refers to the positive end. Sociologists generally use alienation to indicate their concern, while psychologists typically use the label of involvement, as does Kanungo, to indicate their concern.[1] Labels are arbitrary, and we could equally well use either alienation, involvement, or motivation. Motivation was used in the 1972 edition of this handbook because of its widespread acceptance, and we see no compelling reason to use another label for this edition. Involvement has many meanings in the study of organization, and alienation has a negative connotation, which we seek to avoid with our labels. As another example, we prefer the label "administrative staff" to the label "bureaucracy" because of the negative connotations of the latter.

Marx has not been a significant influence in the study of organizations. His influence is considerably greater in Western Europe than the United States, but for better or worse the study of organizations has been mostly an American enterprise. Where Marxist scholars have written about organizations (examples would be alienation, conflict, and ideology) measurement has not been a major concern. The important research by Edwards (1979), for example, offers no measure of conflict, yet conflict is a critical feature in his description of the transformation of the American workplace.[2] In short, more work by Marxist scholars is not in the handbook because these scholars have not produced a body of solid measurement literature applicable to organizations. Our view is that the study of organizations would significantly benefit from increased productivity by Marxist scholars. Fortunately, this greater productivity may be occurring, if the work by Burawoy (1979) and Edwards (1979) are indications of a trend.

Measurement

The two measurement selections illustrate two different approaches to the measurement of motivation. Kanungo (1982), the first selection, uses the standard questionnaire approach, whereas Warr and his colleagues (1979) use the interview approach, which is less often used by researchers. We welcome both approaches. Objective measures are not offered because motivation is an orientational concept best measured by questionnaires and interviews.

KANUNGO (1982)

Description

The basic objective of this research is to define and offer a measure of alienation–involvement. To provide a clear definition, the literature is reviewed; to obtain a valid and reliable measure, an empirical study is reported.[3] The sample for the study consisted of 703 full-time employees enrolled in undergraduate and graduate-level evening extension courses in three major universities in Montreal, Canada. In terms of demographic characteristics, the sample was heterogenous (p. 103).

Definition

Sociologists typically refer to the concept Kanungo examines as "alienation," whereas psychologists generally use the term "involvement" to identify their object of concern. Although referring to the same concept, alienation and involvement represent opposite ends of a continuum. Kanungo prefers the term "involvement," and we will henceforth follow his preference.

Involvement is defined as the "cognitive belief states" of employees and is distinguished from satisfaction and behavior (pp. 76–77). "Psychological identification" is frequently used in place of cognitive belief states (pp. 84, 97). Two dimensions of involvement are set forth, those pertaining to a specific *job* and those pertaining to *work* in general (p. 79).

Data Collection

Three different questionnaire formats were used to collect the data: Likert, semantic differential, and graphic. We focus only on the Likert format.

Ten questionnaire items were used to collect data about *job* involvement.[4] The following instructions preceded the ten items: "Below are a number of statements each of which you may agree or disagree with depending on your own personal evaluation of *your present job*. Please indicate the degree of your agreement or disagreement with each statement by putting a cross (X) mark in one of the six blanks representing the answer categories (strongly agree; agree; mildly agree; mildly disagree; disagree; and strongly disagree) that appear against the statement" (p. 169).

The ten items are as follows: "The most important things that happen to me involve my present job; To me, my job is only a small part of who I am; I am very much involved personally in my job; I live, eat, and breathe my job; Most of my interests are centered around my job; I have very strong ties with my present job which would be very difficult to break; Usually I feel detached from my job; Most of my personal life goals are job-oriented; I consider my job to be very central to my existence; I like to be absorbed in my job most of the time." (pp. 169–170). As indicated in the instructions, there were six possible responses for each statement.

Six questionnaire items were used to collect data about *work* involvement.[5] The instructions preceding work involvement were the same as those preceding job involvement, except that the instructions for work involvement refer to "work in general" rather than "your present job."

The six items are as follows: "The most important things that happen in life involve work; Work is something people should get involved in most of the time; Work should be only a small part of one's life; Work should be considered central to life; In my view, an individual's personal life goals should be work-oriented; Life is worth living only when people get absorbed in work." (p. 173). The same six possible responses were provided for each work involvement statement as were provided for job involvement.

Calculation

The scoring is not clearly indicated. The positive questionnaire items appear to have been scored from one to six, with "strongly agree" scored as six and "strongly disagree" scored as one.[6] Negative items were scored in a reverse manner. The key point, which is indicated by Kanungo, is that higher scores mean higher involvement. An index was apparently constructed by summing the responses to the items. Means and standard deviations are provided for each item and for the indices. The means and standard deviations for job involvement and work involvement indices are, respectively, 31.31, 10.61 and 20.70, 5.97 (pp. 98–99).

Validity

Two sets of data are basic to validity.[7] First, the multitrait–multimethod procedure recommended by Campbell and Fiske (1959) was used to assess convergent and discriminant validity. Results from this procedure are in agreement with expectations (p. 109). Second, dimensionality was assessed by a principal components factor analysis followed by a varimax rotation. The factor analysis was performed for each of the three questionnaire formats: Likert, semantic differential, and graphic. Each analysis yielded two clear interpretable factors for job and work involvement (pp. 113–114). Kanungo believes that the measures have satisfactory validity (p. 116).

Reliability

Three measures of reliability are available. First, the average item-total correlations for job and work involvement are, respectively, 0.67 and 0.66 (pp. 98–99). Second, for the entire sample ($N = 703$), Cronbach Alphas of 0.87 and 0.75, respectively, are reported for job and work involvement (p. 105). Third, for a sample of employees ($N = 63$), taken within three weeks from administration of the questionnaires, test–retest coefficients of 0.85 and 0.67 are reported for job and work involvement, respectively (p. 105). According to Kanungo, this is satisfactory reliability (p. 116).

Comments

A very impressive feature of Kanungo's research is his concern with both conceptual analysis and measurement. Seldom is a single study so careful in its treatment of both topics. To develop a general instrument, however, replications are needed on different samples. A general instrument cannot be developed on one sample, an argument that Kanungo would certainly endorse.[8]

We appreciate Kanungo's clear definition of involvement, his precise distinctions between involvement, satisfaction, and behavior, and his specification of the dimensions of job and work involvement. This work clearly moves the study of involvement ahead. From our perspective, involvement corresponds to motivation, since employees who have strong cognitive belief states are very willing to work. An examination of Kanungo's questionnaire items indicates that he is measuring motivation as studied in the McClelland–Atchinson tradition cited at the beginning of the chapter. Since traditional research on motivation does not distinguish specific and general motivation (Kanungo's job and work involvement), however, Kanungo's dimensions are an improvement on motivational research in the McClelland–Atchinson tradition.

As previously indicated, Kanungo clearly distinguishes involvement from satisfaction. This is a sound distinction, but he frequently refers to involvement as "psychological identification" (pp. 84, 97). To many scholars, identification is very close in meaning to satisfaction. Clarity would have been improved if references to identification were dropped.

The use of three questionnaire formats to collect the data is impressive, since this provides for the assessment of validity in accordance with the procedure recommended by Campbell and Fiske (1959). Response-set bias, however, may be a problem. Eight of the ten Likert-type items for job involvement are positive; this ratio is five to six for work involvement. The preferred pattern is to distribute randomly on the questionnaire an equal number of positive and negative items.

We agree with Kanungo in his assertion that his measures possess "satisfactory psychometric properties" (p. 116). Rarely are the issues of validity and reliability so carefully treated. We also appreciate the complete data about means and standard deviations. Instructions for the scoring, however, should have been more complete; the reader should not have to guess at the scoring.

Source

Kanungo, R.N. 1982. *Work Alienation* (New York: Praeger).

WARR, COOK, AND WALL (1979)

Description

The purpose of this research is to develop measures of eight concepts pertinent to the quality of work life: work involvement, intrinsic job motivation, higher-order need strength, perceived intrinsic job characteristics, job satisfaction, life satisfaction, happiness, and self-rated anxiety. To develop these measures, two empirical studies were conducted on male blue-collar workers employed by manufacturing organizations located in the United Kingdom.[9] The *N*s for the two studies were 200 and 390.

Definition

Our concern in this handbook is with work involvement and intrinsic job motivation. Work involvement is defined as "the degree to which a person wants to be engaged in work" and intrinsic job motivation as "the degree to which a person wants to work well in his or her job in order to achieve intrinsic satisfaction" (p. 133). Work involvement focuses on *work in general,* whereas intrinsic job motivation is concerned with the *specific job* presently occupied. Lodahl and Kejner's (1965) research is the basis for work involvement, whereas Lawler's (1969) research is the stimulus for intrinsic job motivation.

Data Collection

The data were collected by interviews conducted in the homes of the respondents. An interviewer read the instructions and items, and the respondent selected an answer from the set of alternatives listed on a card. The interviewer then recorded the response in numerical form on an interview schedule.

For *work involvement,* the interviewer read the following material to the respondent: "For some people work is just a means to get money, it's something they have to put up with. For others, work is the center of their life, something that really matters to them. I would first of all like to ask you about your reactions to work in general, and whether actually doing work is important to you personally. By 'work' I mean having a paid job. Here are some statements which people have made about work and working, in general. Without limiting yourself to your present job would you indicate on the scale (SHOW CARD 'W') how strongly you agree or disagree with each comment in turn? Remember that I'm asking about paid jobs in general, not simply your present job." (p. 145).

The following six statements were read to the respondent: "Even if I won a great deal of money on the pools I would continue to work somewhere; Having a job is very important to me; I should hate to be on the dole; I would soon get very bored if I had no work do; The most important things that happen to me involve work; If unemployment benefits were really high I would still prefer to work." (p. 145).

The following responses were on Card W: "No, I strongly disagree; No, I disagree quite a lot; No, I disagree just a little; I'm not sure about this; Yes, I agree just a little; Yes, I agree quite a lot; Yes, I strongly agree." (p. 147).

For *intrinsic job motivation* the interviewer read the following material to the respondent: "Now can we move a little closer to how you personally feel about your present job? Again I would like you to think about a number of statements that people have made about work, but this time think about your present job, not work in general. Please indicate on the same scale as before (SHOW CARD 'W') how strongly you agree or disagree with each comment. Remember that I'm asking now about your present job as a . . . . . (INSERT TITLE)." (p. 145).

The following six statements were read to the respondent: "I feel a sense of personal satisfaction when I do this job well; My opinion of myself goes down when I do this job badly; I take pride in doing my job as well as I can; I feel unhappy when my work is not up to my usual standard; I like to look back on the day's work with a sense of a job well done; I try to think of ways of doing my job effectively." (p. 145). The responses on Card W were used for both intrinsic job motivation and work involvement.

Calculation

Scoring was from one to seven, with the most extreme disagreement scored as one and the most extreme agreement scored as seven. The seven items were summed, with no weights, to construct an index score. More work involvement and more intrinsic job motivation are indicated by higher scores. For the first study the means and standard deviations for work involvement and intrinsic job motivation are, respectively, 31.77, 5.98 and 35.13, 5.46 (p. 135). The equivalent statistics for the second study are 33.37, 5.86 and 36.82, 5.45 (p. 135).

Validity

Two sets of data are relevant to validity. First there are the results of a factor analysis on six of the concepts being studied. "The factor structure is remarkably consistent with expectations," according to Warr and his colleagues (p. 137). Second, there are agreements with existing results. For instance, the relationships between work involvement and intrinsic job motivation on the one hand, and job satisfaction on the other hand, are in agreement with the literature. Both concepts are positively related (between 0.23 to 0.33) to job satisfaction (p. 142).

Reliability

Four pieces of data are useful in assessing reliability. First, coefficient alphas and test−retest scores are presented for work involvement and intrinsic job motivation. In the first study, the alphas for work involvement and intrinsic job motivation are, respectively, 0.63 and 0.82. Equivalent alphas for the second study are 0.63 and 0.82. Second, item-total correlations are 0.38 and 0.59 for the first study for work involvement and intrinsic job motivation, respectively. For the second study these are 0.48 and 0.61.

Third, sixty participants in the second study were interviewed six months after the original interviews to provide test−retest results. Coefficients of 0.56 and 0.65 are reported for work involvement and intrinsic job motivation, respectively. Fourth, comparisons can be made between the results of the two studies. In general, the results for the two studies (means, standard deviations, coefficient alphas, item-total coefficients, and factor analyses) are consistent (pp. 135, 138−139). Warr and his colleagues believe that the psychometric properties of the measures "appear to be good" (p. 142).

Comments

The type of measurement research this article represents is significant and helps to move the study of organizations ahead. Researchers connected with the MRC Social and Applied Psychology Unit of the University of Sheffield in England have produced a series of these measurement pieces; their material also appears in our discussions of absenteeism and commitment.[10] The only real limitation has been the emphasis on blue-collar workers; the study of white-collar workers is necessary to extend the generality of the Sheffield group's measures.

We appreciate the distinction between work involvement and intrinsic job motivation; these concepts correspond to Kanungo's work on job involvement in the preceding selection. We also appreciate the list of definitions (p. 33) provided by Warr and his colleagues; it is a pleasure not to have to search for the conceptual distinctions. As indicated in the comments on Kanungo's research, we consider work involvement and intrinsic job motivation to be dimensions of our concept of motivation. The measures Warr and his colleagues have advanced can be used to assess willingness to work.

Three points are germane to data collection. First, most organizational data are collected by questionnaire, so it is refreshing to encounter an interview study. The researchers indicate, however, that their measures can easily be adapted to a self-administered questionnaire format (p. 142). Second, the usual Likert format uses a series of agree–disagree responses, with an intermediate response of neither agree nor disagree. We believe the responses provided by Warr and his colleagues, though using the basic Likert format, are an improvement over current practice. "I'm not sure about this" (the Warr et al. response) should be clearer to respondents than "neither agree nor disagree." Third, we also appreciate the emphasis on developing simple measures; most researchers will avoid complicated measures.

The scoring instructions are clear, descriptive statistics are provided, and normative data are included. These features of the research, while not of major importance, are missing in much organizational research.

We agree with Warr and his colleagues that the measures generally appear to have good psychometric properties (p. 142). The use of cross validation is especially impressive. Results for validity and reliability are acceptable, but work involvement is clearly less reliable than intrinsic job motivation. Six months is probably too long an interval for test–retest data, since genuine changes are likely to occur during this period. Questions of validity and reliability are probably so carefully treated in this research because it is a specialized measurement study. More of this type of specialized research is needed.

Source

Warr, P., J. Cook, and T. Wall. 1979. Scales for the measurement of some work attitudes and aspects of psychological well-being, *J. Occupational Psychol.* 52:129–148.

NOTES

1. Although Kanungo uses the term "involvement," his book is titled *Work Alienation*. Alienation may have more marketing appeal than involvement.

2. Nor does Edwards offer a definition of conflict.

3. Three other studies are cited (pp. 118–152) which mostly provide data supporting the distinction between job and work involvement.

4. These ten items were included in a section with five filler items (pp. 169–170). The filler items are excluded from our presentation.

5. These six items were included in a section with five filler items (p. 173). The filler items are excluded from our presentation.

6. The scoring could run from zero to five rather than one to six.

7. The multitrait–multimethod matrix described in this paragraph was also reanalyzed using analysis of variance (p. 110).

8. Kanungo reports, it should be noted, data about three samples (pp. 118–152). Additional replication, however, is still needed to obtain a general measure.

9. Additional demographic characteristics of the workers are provided (p. 134).

10. Cook et al (1981) is also a major measurement work produced by the Sheffield unit.

20

NEED STRENGTH

Definition

Need strength refers to the work values of the employees of an organization.[1] Consider as illustrative the issue of centralization, which from the perspective of an employee is participation in decision-making. Organizational scholars traditionally have believed that increased centralization reduces job satisfaction among employees, since centralization means less employee participation in decision-making (Blumberg 1969). Recently, however, this traditional belief has been challenged by scholars who have argued that the impact of centralization on job satisfaction depends on the preferences, or values, of the employees. If the employees prefer to participate, then increased centralization will decrease job satisfaction. If, however, the employees do not prefer to participate, then increased centralization will not decrease job satisfaction. This emphasis on employees preferences is consistent with what is referred to as the "contingency approach" (Lawrence and Lorsch 1967) and is widely accepted among contemporary organizational scholars.[2] From a statistical perspective, the contingency approach leads the researcher to check for interaction effects. Material about need strength is also found in discussions of "individual growth need strength," "higher-order need strength," and "need dispositions."[3]

Measurement

A sizable measurement literature has developed regarding need strength. We are impressed with the quality and simplicity of the measure proposed by Warr and his colleagues (1979), and the measurement selection for this chapter uses their work. (Chapter 19, on motivation, uses their measurement material on work involvement and intrinsic job motivation.)

WARR, COOK, AND WALL (1979)

Description

The research by Warr and his colleagues is described in Chapter 19 on motivation, and there is no reason to repeat the description. We need only note that important measurement work on higher-order need strength has been performed by Hackman and Oldham (1975); the research by Warr and his colleagues is an attempt to improve the measures developed by Hackman and Oldham, especially with respect to simplicity.

Definition

Higher-order need strength is defined as "the importance which a person attaches to the attainment of higher-order needs" (p. 133).

Data Collection

The discussion of the work of Warr and his colleagues in Chapter 19 notes that data were collected by interviews. Here it need only be indicated that the following material was read by the interviewer to the respondent: "Now let's look at the things that matter to you in a job. What things are important in a job and what things are less important in your opinion? I'd like you to think about paid work in general—any paid job you might do or might like to do, not just your present job. I'm going to mention a number of characteristics which you might look for in a job. Please show me on this scale (SHOW CARD 'Y') how *important* each one is when you think about jobs you would like to have." (p. 146).

The six characteristics the respondent was supposed to evaluate as to importance, all of which were also read to the respondent by the interviewer, were as follows: "Using your skills to the maximum; Achieving something that you personally value; The opportunity to make your own decisions; The opportunity to learn new things; Challenging work; Extending your range of abilities." (p. 146).

Card Y contained seven responses: "Not at all important; Not particularly important; I'm not sure about its importance; Moderately important; Fairly important; Very important; Extremely important" (p. 147).

Calculation

Scoring was from one to seven, with one being the most negative response in each case. The index is the unweighted sum of the responses to the six characteristics. A high score on the index—all sevens would be the highest possible score—would indicate very strong higher-order need strengths. The mean and standard deviation on the first study are 33.69 and 6.80 (p. 135); the corresponding statistics on the second study are 36.07 and 5.03 (p. 135).

Validity

Convergent and discriminant validity are indicated, since in each study the six items for higher-order need strength factored together with no loadings under 0.54 (p. 138).

Reliability

Numerous data are presented to assess reliability. The Cronbach Alphas for the first and second studies are, respectively, 0.91 and 0.82 (p. 135). The test–retest coefficient is 0.26 and is considered by Warr and his colleagues to be "undesirably low" (p. 141). Item-total coefficients for the first and second studies are, respectively, 0.75 and 0.59 (p. 135). Finally, there is the comparison of the results of the two studies with respect to such key statistics as the means, standard deviations, coefficient alphas, item-total coefficients, and the factor analysis. With but a few exceptions, the results are in agreement for the two studies. Warr and his colleagues note that the "psychometric properties" of the measures "appear to be good" (p. 142).

Comments

Since this research is commented upon in Chapter 19 on motivation, the discussion here will mostly emphasize points not made elsewhere.

"Higher-order need strength" corresponds to our "need strength." The "importance" of the six job characteristics is an assessment of the work values of the employees.

Two comments are relevant regarding data collection. First, we appreciate the lead-in statements used by the interviewers. One problem with interviews is that the meanings used by respondents when answering questions may not be the meanings intended by researchers. Lead-in statements should help to correct this problem. Second, the six job characteristics that the respondents are asked to evaluate as to importance mostly revolve about the extent to which the job is routinized. Chapter 25 of this handbook deals with routinization; here it will simply be noted that the first, fourth, fifth, and sixth job characteristics appear to assess directly the extent to which a job is repetitive. The second and third characteristics may also be interpreted as assessing repetition. In short, Warr and his colleagues, from our point of view, are measuring values regarding repetitive work.[4] This is agreeable with us; we simply wish to make explicit what is implicit.

The measure appears to have acceptable validity and reliability, although we are concerned about the low test–retest coefficients. Since six months is a fairly long time between the test and retest, there may be genuine changes occuring in the variables. Changes should not, however, be a major problem with work values, which are formed early in life and usually basically persist throughout the life of an individual.

Source

Warr, P., J. Cook, and T. Wall. 1979. Scales for the measurement of some work attitudes and aspects of psychological well-being, *J. Occupational Psychol*. 52:129–148.

NOTES

1. See Kluckholn (1954) for a discussion of the concept of values. Our thinking about need strength has benefitted from Hackman and Oldham's (1980) helpful book on the design of work, and from their earlier article describing the development of their widely used Job Diagnostic Survey (1975).

2. For some cogent criticisms of the contingency approach, see Pfeffer (1982, pp. 54–63).

3. Motivation could also be viewed as a work value. If so, the willingness to work, our definition of motivation, is a different work value than need strength.

Motivation and need strength are generally distinguished in the literature, and the research by Warr and his colleagues (1979), which we are using as a selection for both motivation and need strength, is an illustration of this feature.

4. Routinization must also be differentiated from the concept of motivation.

21

PAY STRATIFICATION

Definition

Pay stratification is the degree to which income is differentially distributed within an organization; it is often referred to as income inequality.[1] If all the employees of an organization receive equal income, then pay stratification is at the minimum, whereas large differences in income between low-ranking employees and high-ranking employees indicate a substantial degree of pay stratification. Income includes both the cash received and fringe benefits (Lawler 1971, p. 1). Although fringe benefits are becoming more important in organizations, most research on pay stratification only examines the cash received.

Social stratification is the differential distribution of scarce and valued resources.[2] Pay stratification is, of course, but one dimension of stratification. The discussion in Chapter 5 of centralization dealt with power stratification, and Chapter 23 treats prestige stratification, to complete the examination of Weber's three classic dimensions.

Measurement

Although pay stratification is of concern to organizational scholars, it is seldom measured in a careful manner. The usual practice is to note that there is more pay inequality in one organization than another, or between organizations in different societies, as indicated by the ratio between the income of employees at the top and bottom of the hierarchy of authority

(Cockburn 1983, p. 52; Gibney 1982, pp. 66–67; Granick 1962, pp. 46, 51; Moskos 1970, pp. 44–46; Tannenbaum et al. 1974, p. 108; Whyte 1973). A ten-to-one ratio, for example, indicates less inequality than a twenty-to-one ratio. This lack of care with measurement is odd when the measurement of income inequality is such a major concern to both sociologists and economists, and when a major literature exists about this topic. Rather than present a single measurement selection for this chapter, we have reviewed the literature about the measurement of income inequality in sociology and economics. Our review deals exclusively with calculations and does not systematically address issues of data collection. If organizational scholars are going to describe pay stratification, and this seems to be the case, then they should use the best possible measure. Our review will identify the best measures.

REVIEW OF COMMONLY USED MEASURES

We will begin by briefly describing the kind of data necessary for using the measures to be discussed. Next the criteria used to evaluate the various measures will be presented. We will identify some measures that have been used, but are inadequate. Finally, the measures we recommend will be described and discussed.

The Data

The data are the pay of each employee of the organization and can represent any source or combination of sources of pay. For example, the data could be total yearly salary and wages for all employees in the organization, or it could include various forms of fringe benefits such as health insurance or retirement programs paid for by the organization. It would, however, be necessary for all sources to be measured in the same unit, such as dollars. The only requirement of the measures to be described is that the data are ranked: $X_1 < X_2 < X_3 < \ldots < X_n$. This is really no problem, since pay is a continuous variable with a meaningful zero point, and rank-ordering is easily accomplished.

The pay data may come from any source, but most likely personnel records or questionnaire data will be the source. Personnel records would be the most reliable, although questionnaire reports have been shown to be acceptably reliable (Siegel and Hodge, 1968). The measures of pay stratification are statistical transformations or manipulations of the data, and such transformations are evaluated with respect to particular statistical and conceptual criteria, not just the standard validity and reliability concerns we have been utilizing throughout this handbook. Because of this, we will not describe studies that have used the various measures, but will identify the evaluation criteria and then evaluate the commonly used measures with respect to these.

The Criteria

The criteria for evaluating the measures have been discussed extensively by economists and sociologists, but one of the clearest presentations is offered by Allison (1978), from whom we have drawn the three criteria we identify.

(1) When the pay is identical, the measure should equal zero; it should be positive when the pay of two or more employees is different. In short, the scores on the measures should increase as the inequality increases.[3]

(2) The measure should exhibit scale invariance. This means that the degree of inequality will be unchanged when each employee's pay is multiplied by a positive nonzero constant. This is important because it would not be necessary to adjust for inflation when making comparisons over time. In addition, this characteristic allows one to compare organizations where the metrics of the pay measure are different, for example, comparisons of organizations in the U.S., where the dollar is the unit, and organizations in Japan, where the yen is the unit. This characteristic would also allow for comparisons across different dimensions of stratification such as power, pay, and prestige, although this is seldom done.[4] Another desirable characteristic of a scale-invariant measure is that the measure acts according to the principle of equal additions. That is, the measure must decline when a positive constant is added to each income. This means the measure is sensitive to relative inequality. For example, the three incomes of 14,000, 10,000 and 6,000 suggest fairly substantial inequality, but if $100,000 is added to each, the resulting incomes of 114,000, 110,000, and 106,000 represent a situation where there is little inequality.

(3) Another criterion often applied is referred to as the "principle of transfers." In the organizational setting, it requires that the measure will increase in magnitude whenever income is transferred from a poorer employee to a richer one and decrease when the reverse type of transfer occurs. For example, if $2,000 is taken from a company executive and given to a shop supervisor, the measure should decrease in magnitude.

Inadequate Measures

Six commonly used but problematic measures of pay stratification can be identified:

The *mean* pay of employees in an organization is clearly inadequate, since it represents only a summary measure of the central tendency of all employees. It gives no information, by itself, of the degree of inequality. A measure of inequality must provide information about variation or dispersion. One of the simplest measures of dispersion is the *range*, which is defined as the difference between the smallest and the largest incomes. As mentioned in the introduction, the ratio of incomes of the top and bottom employees is often used; it is derived directly from data about the range. The problem with this measure is that it is based on only two values. If these two values are extreme values (outliers) relative to most of the other values, then the range would be very misleading. This can be remedied to a degree by using the interquartile range, which gives the difference between the income extremes that include the middle 50 percent of the income values. Even so, this relies on information from only two cases.

Those who remember their introductory statistics courses know that the measure of dispersion presented as the answer to these problems is the *variance*. The variance (and thus the standard deviation) indeed gives the average dispersion about the mean and does rely on information about all cases. It does not, however, exhibit the desirable characteristic of scale invariance. Thus, comparisons over time or with other types of inequality would not be valid.

Quantiles often are used to present pay inequality data. In particular, quintiles (dividing the data into five categories such that the top 20 percent of the cases are in the top quintile, the next 20 percent in the second quintile, and so on) are often presented in media accounts of pay inequality. Such data are excellent descriptively for the purpose of showing concentration of income. For example, finding that the top 20 percent of employees take in 40 percent of the total pay, and the bottom 20 percent take in five percent of total pay, would clearly indicate inequality. The problem is that a summary measure about overall inequality in the organization is not easily obtained. For example, using "proportion of the total pay taken in by the top 20 percent" does not provide any information about the distribution of pay among the other 80 percent.

Another measure is the *relative mean deviation*, often referred to as "Schutz's coefficient." The formula is

$$D = \frac{1/n \sum_{i=1}^{n} |x_i - \mu|}{2\mu}.$$

The numerator is the average absolute deviation and the denominator is a function of the mean, so the measure is scale invariant. This measure does not, however, follow the principle of transfers.

The *variance of logarithms* is obtained by taking the logarithm of each income and computing the variance of the transformed scores. The formula is

$$L = 1/\mathrm{n} \sum_{i=1}^{n} (z_i - \bar{z})^2,$$

where $z_i = log x_i$ for all i.

Although this measure has some desirable characteristics (Allison 1978, p. 868), it does not satisfy the principle of transfers.

The Best Measures

Three measures can be recommended for use in measuring pay inequality, because they exhibit the characteristics identified in all three criteria:

The coefficient of variation has been suggested as a way of remedying the scale-invariance problem associated with the variance. It is computed as

$$V = \frac{\sigma}{\mu}.$$

Dividing by the mean (or some function of the mean) operates to make the measure scale invariant.

The *Gini Index* is probably the most often used measure of pay inequality. The formula is

$$G = \frac{1/\mathrm{n}^2 \sum_{i=1}^{n} \sum_{j=1}^{n} |x_i - x_j|}{2\mu}.$$

The numerator is the Gini coefficient of mean difference (GMD); it is the absolute difference between all pairs of individuals. The denominator is again a function of the mean introduced to give scale invariance. A computational formula is

$$G = \frac{2}{\mu n^2} \sum_{i=1}^{n} i x_i - \frac{n+1}{n},$$

where ix_i indicates that each score is multiplied times its rank in the total distribution. This index meets all of the criteria identified above.

The Gini Index is usually discussed in conjunction with the Lorenz curve, which is the plot of proportions of total pay against the proportion in the population. Figure 21-1 presents three Lorenz Curves for three different distributions of pay. Line A shows no inequality, whereas line B indicates, for example, that the bottom 75 percent of the population has 50 percent of the total pay. Line C indicates that the bottom 75 percent has approximately 20 percent of the total pay. Mathematically, the Gini Index actually indicates twice the area between the Lorenz curve and the line of perfect equality.

The *Theil Index* is not used as often as the Gini, but it exhibits all of the desirable characteristics and is viewed quite positively by specialists. The formula is

$$T = \frac{1/\mathrm{n} \sum_{i=1}^{n} x_i \log x_i - \mu \log \mu}{\mu}.$$

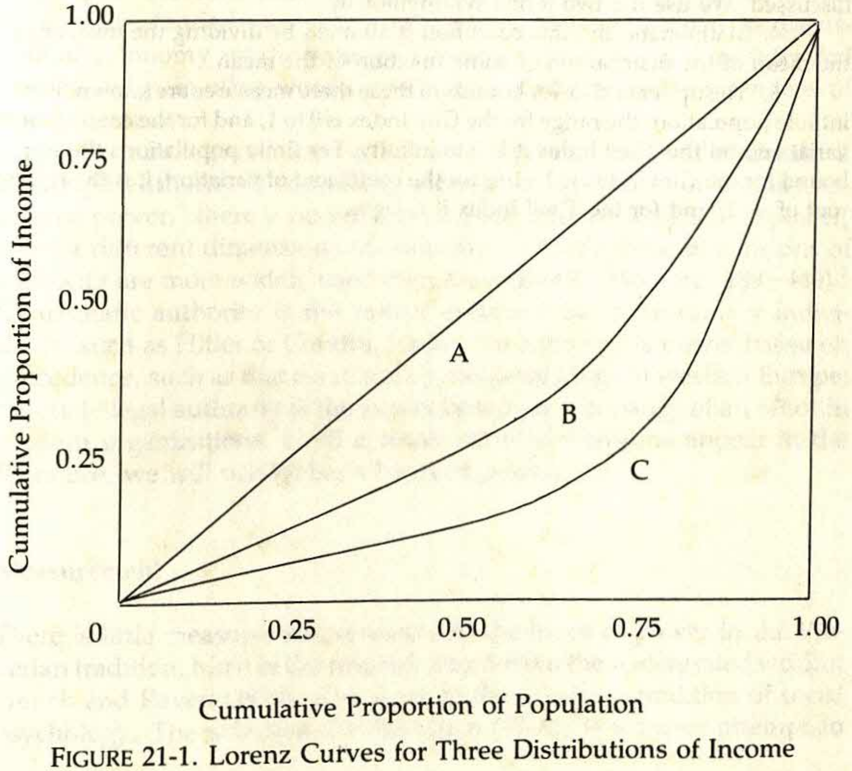

FIGURE 21-1. Lorenz Curves for Three Distributions of Income

Allison (1978, p. 869) argues that perhaps the Theil Index is to be preferred, since careful examination of its behavior regarding the principle of transfers shows it to offer certain advantages. In particular, its sensitivity to transfers decreases as scores increase; this is a valuable characteristic if there are diminishing marginal utilities associated with the pay. However, since the Gini Index has been the most popular in the research literature, if comparisons with other studies is a goal, the Gini should be given serious consideration. The Gini Index, the Theil Index, and the coefficient of variation can all be recommended, however, as measures of pay stratification.[5]

NOTES

1. This definition is based on the following discussion of social stratification.

2. This definition is based primarily on the conceptual discussion of social stratification by Heller (1969, pp. 3–4).

3. Although inequality is a less neutral term than stratification, it has become the more often used term when stratification measures are presented and discussed. We use the two terms synonymously.

4. Mathematically, this condition is attained by dividing the measure by the mean of the distribution or some function of the mean.

5. The upper and lower bounds of these three measures are known. For an infinite population, the range for the Gini Index is 0 to 1, and for the coefficient of variation and the Theil Index it is 0 to infinity. For finite populations the upper bound for the Gini Index is $1-1/n$, for the coefficient of variation, it is the square root of $n-1$, and for the Theil Index it is $\log n$.

22

BASES OF POWER

Definition

In Chapter 4 on autonomy, power is defined as the production by some persons of intended effects on other persons. Not examined in the discussion of autonomy are the bases of a person's ability to produce intended effects—why, in other words, one person conforms to the intentions of another person.

Terminology concerning the bases of power is not well established. Although authority is commonly viewed as legitimate, or socially approved power,[1] there is no widely accepted term for illegitimate power, nor for different dimensions of authority. Weber's three dimensions of authority are more widely used than most (Bendix 1960, pp. 289–449).[2] Charismatic authority is the power exercised by extraordinary individuals, such as Hitler or Gandhi; traditional authority is power based on precedence, such as that exercised by medieval kings in western Europe; rational–legal authority is the power based on occupancy of an office in modern organizations. Until a better set of dimensions appear in the literature, we will use Weber's bases of power.

Measurement

There is little measurement research on the bases of power in the Weberian tradition. Most of the research stems from the widely cited work of French and Raven (1959), who work in the Lewinian tradition of social psychology. The selection, by Bachman (1968), is a major attempt to assess the bases of power proposed by French and Raven. We will present the Bachman measure; our comments, however, will mostly be based on Podsakoff's outstanding review (1985) of field studies using the bases of power proposed by French and Raven. Although Podsakoff's review is not limited to Bachman's research, our comments will reflect only the parts that are pertinent to Bachman's work. We cannot hope to present in these brief comments the full flavor of Podsakoff's review; it must be read to be appreciated.

BACHMAN (1968)

Description

This research attempts to provide some useful guidelines for college administrators and to explore the parallels between administrative processes in higher education and those in other kinds of organizations, especially industrial ones. The respondents selected for study were full-time faculty members at 12 liberal-arts colleges belonging to a regional association of colleges. Faculty size at the 12 colleges ranged from 67 to 173, with a median of 92 and a mean of 101. The sample consisted of 685 faculty members.

Definition

Bases of influence refers to the reasons for doing things suggested by a superior.

Data Collection

The five bases of power proposed by French and Raven were assessed by five questionnaire items, one item for each base of power. Preceding the five items was the following lead-in: "Listed below are five reasons generally given by people when they are asked *why* they do the things their superiors suggest or want them to do. Please read all five carefully. Then number them according to their importance to you as reasons for doing the things your academic dean suggests or wants you to do. Give rank "1" to the most important factor, "2" to the next, etc." (pp. 56–57). The five questionnaire items, the "reasons" referred to in the lead-in, are as follows: "I respect him personally, and want to act in a way that merits his respect and admiration; I respect his competence and judgment about things with which he is more experienced than I; He can give special help and benefits to those who cooperate with him; He can apply pressure or penalize those who do not cooperate; He has a legitimate right, considering his position, to expect that his suggestions will be carried out." (p. 57). The bases of power referred to by the questionnaire items are, respectively, referent power, expert power, reward power, coercive power, and legitimate power.

Computation

The scores were the rank orders assigned by the respondents as noted in the preceding section. Means and standard deviations were computed for the respondents as discrete individuals (*N* = 685) and as members of colleges (*N* = 12). Table 22-1 presents these means and standard deviations for the bases of deans' influence (p. 57). The lower the score for the basis of influence (1 and 5 are minimum and maximum scores), the more important is the particular basis of influence being ranked.

Validity

Two sets of data are helpful in assessing validity. First, satisfaction with an academic dean is higher when the dean's influence is based on expertise and personal attractiveness (the expert and referent bases of influence) than when the dean's influence is based on legitimacy and the use of sanctions (the reward and coercive bases of influence). This finding corresponds to the results of a previous study of account executives and office managers (Bachman et al. 1966). Second, in the study of account executives and office managers, legitimate influence was consistently

TABLE 22-1 Bases of Deans' Influence: Means and Standard Deviations

Type of power	Means among individuals (*N* = 685)	SD among individuals (*N* = 685)	SD among college means (*N* = 12)
Referent	2.48	1.09	0.19
Expert	1.94	1.15	0.38
Reward	3.67	0.96	0.16
Coercive	4.40	1.07	0.26
Legitimate	2.40	1.14	0.20

rated most important. In the present study, on the other hand, expertise is considered the most important basis of the dean's influence, with legitimate influence given a second level of priority. As might be predicted, college faculty members are clearly less likely than account executives and office managers to see themselves as subordinated in a hierarchy.

Reliability

The study contains no data relevant to reliability.

Comments

Before summarizing Podsakoff's material pertaining to Bachman's attempt to measure French and Raven's bases of power, let us relate the French and Raven material to our Weberian approach. This handbook is not the place to develop a set of concepts that encompasses the bases of power. We can, however, briefly discuss the French–Raven and Weberian approaches to the development of these concepts, and leave to someone else the task of developing a more adequate set of concepts.

A point that must be kept in mind in the following discussion is that French and Raven do not distinguish legitimate and illegitimate power. (Their legitimate power is not this distinction, as we will soon indicate.) Referent power roughly corresponds to Weber's charismatic authority. Expert power has no Weberian equivalent, since Weber assumed that the modern bureaucrat, who exercises rational–legal authority, is competent. Reward and coercive power also have no Weberian equivalents; Weber assumed that individuals who exercise legitimate power (whether charismatic, traditional, or rational–legal) would have rewards and punishments at their disposal. Legitimate power is a close approximation to Weber's rational–legal authority, and is not used as a distinction from illegitimate power. French and Raven have no equivalent to Weber's traditional authority.

Podsakoff's review covers all the field studies relevant to French and Raven's bases of power; all that will be noted here are the parts of the review that are relevant to Bachman's effort to measure French and Raven's concepts. Bachman's efforts, while of major importance, are not the only measurement work in the French and Raven tradition. The term "influence" for Bachman corresponds to our "power."

Five comments in the Podsakoff review seem especially germane to Bachman's work. First, the measure of coercive power (He can apply pressure . . .) is ambiguous as to whether or not the leader's request is considered legitimate or socially appropriate by subordinates. A legitimate request by a college dean, for example, will have a very different impact on a professor's orientation and performance than an illegitimate request. Second, each base of power is assessed by a single item. With a single item, not only is it difficult to capture the total range of a concept, but measures of inconsistency cannot be calculated.

Third, Bachman makes no attempt to assess the role that social desirability might play in the answer given by the respondents. Professors may, for instance, conform to the deans' requests because of reward power (He can give special help . . .) or coercive power, but since this is not a desirable reason for conforming, state that they conformed because of the more socially desirable referent power (I respect him personally . . .) or expert power (I respect his competence . . .). Fourth, no attempt is made to determine the independent effect of each power basis on the criterion variables. For example, when examining the impact of referent power on satisfaction with the dean, controls were not introduced for the other four bases of power. Fifth, any single base of power can only be given prominence at the expense of the other bases. The ranking format used is responsible for this result; Podsakoff recommends the Likert format to avoid this problem.

The importance of French and Raven's attempt to conceptualize bases of power is indicated by the substantial literature reviewed by Podsakoff that came just from field studies. Given the obvious importance of French and Raven's work, we are impressed by the lack of relevant measurement or conceptual research. No major new measures have been developed, and French and Raven's set of concepts has not been refined.

Source

Bachman J.G. 1968. Faculty satisfaction and the dean's influence: An organizational study of twelve liberal arts colleges, *J. Appl. Psychol.* 52: 55–61.

NOTES

1. This point is made in the literature cited in Chapter 4 in the discussion of power.

2. Bendix uses the term "domination" rather than "authority," but we continue to use authority because it is used most widely.

23

PRESTIGE STRATIFICATION

Definition

Prestige stratification is the degree to which status is differentially distributed within an organization. Military organizations are well known for their high degree of prestige stratification. All soldiers, for instance, wear uniforms that clearly indicate their status in the organization. Revolutionary change in Communist countries, such as the U.S.S.R. and China, was accompanied by reduced prestige stratification in the organizations of these countries. Examples are the emphasis on a common dress for everyone and widespread use of the term "comrade." Material relevant to prestige stratification is also found in discussions of "status hierarchy," "rank consciousness," and "rank emphasis."

Prestige in organizations, it should be emphasized, is assigned to occupational roles and not to special individuals. It is the "chief executive officer," whoever he or she may be, who has the corner office, limousine, private toilet, secretary, and so forth. When the chief executive leaves the role for any reason, the individual no longer has access to the symbols of prestige linked to the office. This is central to the meaning of Weber's rational legal authority, discussed in Chapter 22, Bases of Power.

Measurement

Organizational scholars frequently refer to prestige stratification, but they never offer any measures of the concept. The most they offer is examples, such as the use of uniforms as indicative of status differences.

The first measurement selection will indicate how sociologists, who have done extensive work in this area, commonly assess prestige stratification (Siegel 1971). A modified version of this measure can be used in the study of organizations. Following the selection we will offer some questionnaire items designed to collect data to measure prestige stratification.

SIEGEL (1971)

Description

The goal of this research was to obtain the prestige ranking of over 400 occupations in the U.S. Census three-digit occupation scheme; it represents an extension of the work begun by North and Hatt (NORC 1947). Three surveys were conducted, in 1963, 1964, and 1965, on samples of the U.S. population.

Definition

The prestige of an occupation is defined as the general public estimation of the social standing of that occupation.

Data Collection

Two strategies were used to establish the prestige ranking. In the first, respondents were asked to sort each occupation into one of nine boxes (this is a ladder format, representing high to low social standing). In the second strategy, the respondents were asked to rate the "general standing" of each occupation by placing it on a five-point scale ranging from excellent to poor.

Calculation

These rankings by respondents were tabulated to arrive at a prestige scale that has a theoretical range of zero to 100. It is not necessary to describe in detail the computational procedures, because researchers who use it need not go through this process of ranking occupations. The scale is now available in terms of the prestige score associated with each of the U.S. Census three-digit occupation codes. Thus, what the researcher needs are the three-digit codes for the occupations of the individuals in the study.

The best discussion of how to obtain information about occupations and how to determine which three-digit codes to assign is in Featherman and Hauser (1977). A complete and updated listing of three-digit occupations, their codes, and the Siegel prestige scores is available in the General Social Surveys, 1978–1984: Cumulative Codebook (NORC 1984). It is important to emphasize that obtaining the necessary occupation data is not simply a matter of asking "what is your job?"

Validity

The construct validity of this measure is clearly not in question, given that hundreds of studies in stratification have shown it to be related to other variables in the hypothesized manner. Some have questioned whether it actually measures prestige, suggesting that it would be better labeled a measure of the more general concept of socioeconomic status. This argument is made because, when raters are asked about the criteria used to rank the occupations, they most often give monetary and education-related reasons.

Reliability

There is substantial evidence regarding the reliability of the scale (Hodge, Siegel, and Rossi 1964; Hodge, Treiman, and Rossi 1966; Siegel 1971). It is stable over a span of several decades, over various subpopulations of raters defined by varying socioeconomic characteristics, across geographical regions, and across numerous societies.

Comments

The measurement work on prestige rankings of occupations—and more generally, on measures of socioeconomic status—has been vitally important in the sociological study of stratification. A general discussion of this is available in Mueller and Parcel (1981). The emphasis on the "general standing" of the occupation has been viewed as imprecise by some, but since the reliability has been so high, there is not much of a basis for arguing that the frame of reference should be changed.

It is important to stress that use of this measure requires complete information on the occupations of the organization employees. "Complete" means that there is sufficient information to assign one of the three-digit occupation codes. Researchers unaware of this necessity typically do not obtain enough information to use the Siegel scale.

Just obtaining the prestige scores for the occupations in the organization does not reveal much about the degree of prestige stratification in the organization. In fact, the distributional data (mean, median, variance, range, etc.) are not acceptable measures of stratification. Our recommendation is that the prestige data obtained in the manner described above be used in computing the Gini Index, the Theil Index, or the coefficient of variation. In short, we are suggesting that the measures of pay inequality be used to obtain summary measures of prestige inequality.

As mentioned, there is some question as to whether the Siegel scale captures only prestige, rather than a general socioeconomic status concept. We do not view this as a critical issue, since the correlations among these various measures are quite high. The cross-population and over-time reliability of this measure has been clearly established.

Source

Siegel, P.M. 1971. Prestige in the American occupational structure (unpublished Ph.D. dissertation, Univ. of Chicago).

ADDITIONAL MEASUREMENT SUGGESTIONS[1]

The following lead-in statement should precede the questionnaire items: "Indicate the extent of your agreement or disagreement with the following statements, dealing with *prestige differences* in your organization. ('Managers' in the following statements means everyone from the first-level supervisor to the chief executive officer.)"

The lead-in statement is followed by eight questionnaire items: "(1) Managers can generally be distinguished by the kinds of clothes they wear. (2) At work, managers mostly eat with other managers. (3) Managers and nonmanagers are usually on a first-name basis. (4) Managers and nonmanagers are often close friends. (5) The titles of managers are generally indicated after their names. (6) It is usually not necessary to check with a manager's secretary before seeing the manager. (7) Titles are typically indicated on the doors of managerial offices. (8) Employees are usually listed alphabetically on various types of employee lists." Each of the eight questionnaire items has five responses: strongly agree, agree, neither agree or disagree, disagree, and strongly disagree.

Strongly agree should be scored as five, and strongly disagree should be scored as one for items (1), (2), (5), and (7). For items (3), (4), (6), and (8), strongly agree should be scored as one and strongly disagree should be scored as five. The scores should be summed to obtain a score for the index, whose range extends from eight to 40. A score of 40 indicates the highest possible amount of prestige stratification.

Since the index has not been used, we have no data about its validity or reliability. Our hope is that publication of the index will result in its use.

The information necessary to measure prestige stratification could be collected by observation or records, rather than by questionnaire as proposed. If the organization is fairly small, the data can reasonably be collected by observation. Small units in large organizations can, of course, be observed. Records should yield some data about prestige differences, such as whether the employees are usually listed alphabetically or by rank. Most of the data, however, will not be available on records. We recommend use of the questionnaire, validated by observational data collected on small units, those preferably small units in organizations of different sizes.

NOTES

1. Our thanks to John Hill, a graduate student in Accounting at the University of Iowa, for assistance in constructing this measure.

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PRODUCTIVITY

Definition

Productivity is the ratio of output to input in an organization (Kendrick 1977, p. 1). Output consists of the goods and services produced by an organization, whereas input consists of the resources (land, labor, plant, and equipment) used to produce the outputs. The more output that can be produced with a given level of input, the greater the productivity; similarly, the less input needed to produce a designated level of output, the greater the productivity. Material about productivity is often found in discussions of "efficiency."

Productivity must be distinguished from effectiveness. Organizations that have high productivity will very likely be financially viable, and thus, according to our definition, be effective. A business firm that is a "low-cost producer," for instance, will probably be very profitable. A depressed market may reduce profitability, however, despite low production costs per unit of output. Business firms that have low productivity may also be very profitable. A defense contractor in the United States may have high unit costs, but due to a very favorable contract with the Department of Defense, may be very profitable. Thus, although productivity and effectiveness typically covary, the two concepts are different and should not be used synonymously.

Organizational scholars do not give much attention to productivity. Major texts, for example, have extensive discussions of effectiveness, but allocate little space to productivity (Hall 1982; Scott 1981). Although we mostly restrict this handbook to the concepts typically discussed by organizational scholars, when a concept that we believe to be important is not discussed, we will include that concept in the handbook. It is clear that productivity is of major significance to a society, and since organizations are the major means of production in modern societies, we believe the concept should be a central one in the study of organizations.

Measurement

Measurement discussions of productivity among organizational scholars are usually less than adequate. Output per employee, for example, is often the measure used in these discussions; this is a clearly inadequate measure, since it ignores the varying lengths of time employees work. Because of this, the material in this section is based on the work of economists, who generally use the economy or industry as their unit of analysis.[1] There are many measures of productivity in the literature, and rather than review these we will present what appears to be a viable measure and offer a rationale for its use.[2]

The recommended measure is cost per unit of output—that is, the output of an organization divided by the costs incurred by the organization. Four features of this measure are noteworthy. First, it takes into account all costs used in producing the output of the organization. The widely used output per hour worked, the index of "labor productivity," only takes into account inputs contributed by labor, ignoring such inputs as land, plant, and equipment. Costs associated with plant and equipment are especially important in producing an output and should not be ignored. Second, cost per unit of output takes into account the input contributed by all employees. Some measures of productivity only consider the inputs from production employees, ignoring the indirect input from the growing number of employees of the administrative staff. Administrative staff employees should be included, since they are part of the labor costs of an organization.

Third, the recommended measure takes into account the amount of time worked by the employees. Since employees work varying amounts of time, any measure that limits itself to the *number* of employees, as does output per employee, will inaccurately represent labor input. The labor costs of an organization will reflect the total amount of time worked by the employees. Fourth, cost per unit of output takes into account the quality of the labor expended in production. Output per hour worked treats each hour worked the same, whether the hour was worked by an unskilled laborer or by a highly skilled craftsman. Since the craftsman is paid more than the laborer, the costs per hour worked by the craftsman will be greater than the costs for the laborer. In short, an hour worked by a craftsman will count more in the cost per unit of output than an hour worked by a laborer. The assumption is that the differences in pay reflect differences in quality of input.

Cost per unit of output ignores improvements in the product that occur through time. Automobiles have improved enormously since the turn of the century, but none of these improvements are captured by cost per unit of output. An automobile produced in 1900 is treated the same—it counts as one unit of output—as an automobile produced in 1984. No measure of productivity assesses changes in product improvement through time, so the recommended measure shares this deficiency with all the measures of productivity. Since prices are involved in the calculation of costs, historical comparisons of productivity will naturally have to adjust for changes in the price level.

An implication of cost per unit of output is that comparisons for productivity can only be made between organizations whose output is the same. Consider hospitals as an illustration. Two voluntary, short-term, general hospitals might properly be compared, since the output of both is reflected in the number of patient-days of care provided. The productivity of a voluntary hospital cannot properly be compared with the productivity of a university hospital, however, since the outputs of the two hospitals are very different. University hospitals care for patients, but they also train health-care personnel and conduct research. In short, it is not possible to construct a general measure of productivity, since the outputs of organizations vary so greatly. This same problem was discussed with regard to the measurement of effectiveness.

Questionnaires, interviews, and observations are of limited utility in collecting data to measure productivity. The data for costs per unit of output will be available in the records of an organization. Costs of land, labor, plant, and equipment are regularly tabulated by organizational employees, so collection of this information should pose no major problem. It will be more difficult to collect data about output, especially for service organizations. Universities, for instance, usually know how many different students they enroll during a year, but this is not a valid measure of output, since the amount of instruction received by each student varies greatly. Some students spend three hours per week being instructed, whereas many spend 15 hours or more per week being instructed. It will take a considerable amount of work to ascertain the student-hours of instruction provided by a university, a much better measure of output than the number of students enrolled. Student-hours of instruction will be available somewhere in the records, however, and must be ascertained to measure productivity properly.

NOTES

1. The unit of analysis is usually the *private* economy and *groups* of industries.

2. We have found the work of Fabricant (1969) and Kendrick (1977) to be especially helpful.

25

ROUTINIZATION

Definition

Routinization is the degree to which a job is repetitive.[1] A high degree of repetitiveness signifies a highly routinized job. Clerical and laboring jobs are typically highly routinized, whereas professional and craft jobs are usually lowly routinized. This chapter on routinization is one of five presenting material about technology. The chapters on complexity (8), departmentalization (11), mechanization (18), and standardization (28), also address technology.

Routinization is an important concept in the study of organizations. Material relevant to it is treated under a diversity of labels: variety, task variability, formatted tasks, task predictability, uncertainty, and workflow predictability. The use of variety is especially widespread, stemming mostly from the important Job Diagnostic Survey (Hackman and Oldham, 1975). The term "routinization" is also widely used in the literature, however, and since it was used in the 1972 edition of this handbook, we will continue to use the term.

Routinization is sometimes confused with the division of labor dimension of complexity. When the subdivision of labor is high, as is often the case in a factory, a great many jobs are highly routinized. This relationship need not always hold, however. For example, the subdivision of labor is high in university hospitals, but in these organizations a great many jobs are lowly routinized, especially those of the professional staff. In short, the subdivision of labor dimension of complexity can be associated with either highly or lowly routinized jobs. Routinization thus must not be confused with an extensive subdivision of labor.

Measurement

There is a sizable amount of measurement research available regarding routinization. Fortunately, Withey and his colleagues (1983) have evaluated six of the more important studies and have designed an improved measure based on these six. Research such as this makes compilation of a handbook considerably easier.

WITHEY, DAFT, AND COOPER (1983)

Description

The purpose of this research was to provide a systematic comparison and improvement of six measures of work-unit technology. All of the measures examined use Perrow's (1967; 1970) widely cited research on technology.[2] A sample of 23 work units was drawn from a large Canadian government agency. The work units were selected in such a manner that their technology was basically homogeneous within the units and the different aspects of Perrow's concept of technology were represented. Twenty-three supervisors and 169 workers completed the questionnaires used to collect the data.

Definition

Technology is defined as "the actions employed to transform inputs into outputs" (p. 46). Two dimensions of technology are distinguished: the number of exceptions and analyzability (p. 46).[3] This chapter is concerned with exceptions; Chapter 28 on standardization will examine analyzability. The number of exceptions is "the frequency of unexpected and novel events" that occur in the process of transforming input into output (p. 46).

Data Collection

The results of the research demonstrate substantial convergence among the six measures of work-unit technology. Although two of the measures are quite good, no single measure emerges as clearly superior to the others. A new measure was constructed from the six measures to overcome the deficiencies indicated by the research.[4] Since the new measure improves on the six existing measures, our focus in this selection is on the new measure.

Exceptions were measured by five questionnaire items.[5] The first question was preceded by a lead-in statement: "The following questions pertain to the normal, usual, day-to-day pattern of work carried out by yourself and the people in your work unit. Please circle the appropriate answers." The first question was, "How many of these tasks are the same from day-to-day?"

The next three questions were preceded by the lead-in: "This part includes more questions about the nature of your normal, usual day-to-day work activities. Please circle the appropriate answer to each of the following questions." The second question was, "To what extent would you say your work is routine?" The third question was, "People in this unit do about the same job in the same way most of the time." The fourth question was phrased, "Basically, unit members perform repetitive activities in doing their jobs."

The lead-in for the fifth question was: "The following questions pertain to the amount of variety you encounter in your daily work. Please circle the number which best describes your job." "How repetitious are your duties?" was the fifth question.

The responses to the five questions used variations on a common format. Each had seven numbered responses (1 through 7) arranged horizontally. For the first question, three phrases were placed above the seven numbers: very few of them; some of them; most of them. "Very few of them" was placed above the 1, "most of them" was placed above the 7, and "some of them" was placed above the 4.

The second, third, and fourth questions used the same response format. Each question had seven numbered responses, with the following phrases placed at the extremes and midpoints: to a small extent; to some extent; to a great extent. "To a small extent" referred to 1, "to some extent" referred to 4, and "to a great extent" referred to 7. The response phrases were placed immediately following the lead-in, to refer to the three questions. Each question, in short, did not have its separate set of response phrases.

The fifth question had the same seven numbered responses as the first four questions, but its response labels were different. Response 1 was labeled "very little," 4 referred to "moderate amount," and 7 referred to "very much."

Computation

A score of 1 means the most exceptions and a score of 7 means the least. Where there are few exceptions (the 7s), the work is most routine. An individual's score is obtained by summing the scores on the five items and the score for a work unit, the focus of the study, is obtained by averaging the individual scores.

Descriptive statistics are not provided for the 23 work units examined. Means, however, are provided (p. 60) for four units: computer operations (2.4), methodology (5.3), training package (3.9), and systems analysis (4.2). These four units represent different aspects of Perrow's ideas about technology.

Validity

Six types of data are especially pertinent to the new measures designed by Withey and his colleagues.[6] First, a confirmatory factor analysis yielded two clear factors, one of which is interpretable as "exceptions," the other as "analyzability." The average loading of the five items for exceptions is 0.77 (p. 59). Second, convergent validity is indicated by a correlation of 0.87 between the index for exceptions and the task variety measure of the Job Characteristics Inventory (Sims et al. 1976).[7] Task variety on the JCI is intended to measure the same concept as the number of exceptions.

Third, and also with respect to convergent validity, there is considerable agreement (0.65) between the workers and the supervisors concerning the number of exceptions (p. 59). Fourth, data from a multitrait–multimethod matrix are consistent with discriminant validity (pp. 53–54). Fifth, the new measures are substantially in agreement with the six original measures (0.83), also demonstrating convergent validity (p. 59).[8]

Sixth, the scores on the new measures were compared with the descriptions of technology provided by two external raters, both of whom were professors who had teaching and research experience with Perrow's work. There is considerable agreement (0.59) between the workers and the external raters (p. 59). Withey and his colleagues believe that the new measures "display reasonable psychometric properties" (p. 61).

Reliability

The Cronbach Alpha for the new index used to measure the number of exceptions is 0.81 (p. 59).

Comments

As we have indicated elsewhere in this handbook, the increase in measurement research like that by Withey and his colleagues is a very positive development in the study of organizations. The construction of theory in the area of technology should be advanced by this research. What is especially impressive is that Withey and his colleagues not only evaluated existing measures of technology, but sought an improved version of the existing measures. Too rarely do researchers both evaluate *and* improve existing measures; the usual pattern is only to criticize negatively. Withey and his colleagues clearly recognize the need for additional work in other settings with their improved measures. In short, they recognize that one Canadian government agency is a rather narrow sample.

The number of exceptions corresponds to our concept of routinization. Where there are few "unexpected and novel events" that occur in transforming input into output, work is highly repetitive. This correspondence is not surprising, since our ideas about routinization are mostly derived from Perrow's work.

Three points are important regarding data collection. First, since the five new measures of exceptions are based on three existing measures, slightly different formats were used to collect the data, as indicated in the description of the questionnaire items. A standard format should be designed for the new measures when additional work is done. A new format will require but a slight modification of the new measures and will facilitate research by other scholars.

Second, the reference to "tasks" in the first question ("How many of these tasks . . .") refers to "major tasks" cited in the preceding question ("How much the same are the day-to-day situations, problems or issues you encounter in performing your major tasks?") Unfortunately for the respondent, the preceding question is not provided. This is a small point and can easily be attended to when a standard format is designed for the five questions.

Third, the report of the research does not contain sufficient information to replicate the new measure. Fortunately, the researchers were willing to supply us with the necessary information. This information should be included in the report of the research. None of these problems in data collection is serious. We are pleased with the new index and only wish to improve it and make it more easily available to other researchers.

The material about the computations can be improved in two small ways. First, the researchers note that "approximately half of the items" are reverse scored (p. 51). This note refers, however, to the universe of 50 items, and not to the five new items used to measure the number of exceptions, none of which is reverse scored.[9] Second, descriptive statistics should be provided for all 23 work units, rather than merely providing means for four diverse units.

We agree with Withey and his colleagues that the new measures "display reasonable psychometric properties" (p. 61). The measures should be modified as suggested and used extensively.

Source

Withey, M., R.L. Daft, and W.H. Cooper. 1983. Measures of Perrow's work unit technology: An empirical assessment and a new scale, *Academy of Management J.* 26:45–63.

NOTES

1. We have benefitted from the work on routinization by Hage and Aiken (1969) and Perrow (1967; 1970). The 1972 edition of this handbook, for example, used the Hage and Aiken (1969) measure of routinization. Withey and his colleagues (1983), in the measurement selection for this chapter, use the Hage and Aiken measure in their evaluation and construction of an improved measure. Perrow's work, as Withey and his colleagues (1983) make clear, has been a major force in the study of routinization. Hage and Aiken, for instance, based their research on Perrow's work.

2. The six measures are: Daft and Macintosh (1981), Glisson (1978), Hage and Aiken (1969), Lynch (1974), Van de Ven and Delbelq (1974), and Van de Ven and Ferry (1980). As a check for validity, the task variety items of the Job Characteristics Inventory (Sims et al. 1976) were also used.

3. These definitions are based on the work of Perrow (1967; 1970).

4. One item from the Job Characteristics Inventory (JCI) is used in the new measure of exceptions.

5. Information about the questionnaire items in this section was provided by Michael Withey and Richard L. Daft.

6. Additional data about the construction of the new measures is also provided and is relevant to validity (p. 58).

7. One item on the JCI is included in the new measure of exceptions. That item is therefore shared between the two measures, inflating the correlation.

8. There is, of course, some sharing of items among these measures, a fact noted by Withey and his colleagues (p. 60). This sharing inflates the correlation.

9. When the new standard format is designed, it would also be a good idea to construct about half of the new items so that they can be reverse scored. The positive and negative items should also be randomly ordered in the questionnaire.

26

SATISFACTION

Definition

Satisfaction is the degree to which employees have a positive affective orientation toward employment by the organization.[1] If satisfied employees have a positive affective orientation toward the organization, then dissatisfied employees have a negative affective orientation toward the organization. Various dimensions of satisfaction are commonly distinguished—work, supervision, pay, promotion, coworkers.[2] It is thus possible to have varying degrees of satisfaction toward the different dimensions of employment by the organization.

In the early history of the study of organizations, stemming perhaps from the Western Electric Research (Roethlisberger and Dickson 1939), liking or disliking the organization was nearly always discussed under the label "morale." Currently, possibly as a result of the important measurement research by Smith and her colleagues (1969), satisfaction–dissatisfaction is the preferred label for the extent to which employees like or dislike employment by the organization.

Since the focus of this handbook is on work organizations, the concern in this chapter is with job satisfaction. "Life satisfaction" is an important topic to investigate, and job satisfaction may be a critical dimension of this topic, but the concern of this handbook is with the job rather than with life in general.[3]

Measurement

Satisfaction can be measured globally or dimensionally and directly or indirectly. Global measures refer to general satisfaction (or dissatisfaction) with the organization, whereas dimensional measures refer to satisfaction (or dissatisfaction) with specific features of the organization. Dimensions are sometimes referred to as "facets" and a global measure is often termed a "facet-free" measure. A direct measure of satisfaction uses the term "satisfaction" or an equivalent in questioning or interviewing respondents. With indirect measures, the degree of satisfaction is inferred from questions pertinent to satisfaction, but which never explicitly use the label.

The first selection, by Brayfield and Rothe (1951), is a global and direct measure of satisfaction. No dimensions are assessed, and the lead-in statement preceding the questions refers to "how you feel about your present job" (p. 309). "Feel" is a term often used in place of satisfaction. The third selection, by Smith and her colleagues (1969), is a dimensional and indirect measure of satisfaction. Work, supervision, pay, promotion, and coworkers are the dimensions assessed by means of descriptive labels, with no reference being made to satisfaction, feel, like, or other direct referents. Quinn and Staines (1979), the second selection, is a global measure that is both direct and indirect. Their first question is direct and their next four are indirect. The fourth selection, by Weiss and his colleagues (1967), is dimensional and direct. Its dimensions, intrinsic and extrinsic satisfaction, are different, however, from those used by Smith and her colleagues. The questions used by Weiss and his colleagues do not directly refer to satisfaction–dissatisfaction or any of its synonyms. The lead-in statement preceding the questions, however, refers to "feel," a term often used in place of satisfaction. Although clearly not a global measure due to its reference to specific features of the organization, the measure by Weiss et al. can be combined into a measure of "general satisfaction." Such a combination is not possible with the measure proposed by Smith et al. The four selections thus take different approaches to the measurement of satisfaction.

BRAYFIELD AND ROTHE (1951)

Description

The purpose of this study was to develop an index of job satisfaction. Although different groups were used in development of the index, the final version was administered to only two samples. One sample consisted of 231 female office employees in typing, stenographic, clerical, and accounting positions. These office employees were mostly young, unmarried women without dependents. The average woman in the sample had completed 12 years of schooling, had been on her present job for more than one year, and had been employed by the company for one and three-fourths years. The second sample consisted of 91 adult night-school students in classes in Personnel Psychology at the University of Minnesota during 1945 and 1946. The group included 49 males and 42 females. The age range was from 22 to 54, with a median of 35 years. Practically the entire sample was engaged in either clerical, semiprofessional, professional, or managerial occupations.

Definition

There is no explicit definition of job satisfaction in the article. However, the questionnaire refers to "how people feel about different jobs" (p. 309). The feelings range from highly satisfied to lowly satisfied.

Data Collection

A questionnaire was used to collect the data. A lead-in precedes the questions: "Some jobs are more interesting and satisfying than others. We want to know how people feel about different jobs. This blank contains 18 statements about jobs. You are to cross out the phrase below each statement which best describes how you feel about your present job. There are no right or wrong answers. We should like your honest opinion on each one of the statements."[4]

The 18 questions are as follows: "(1) My job is like a hobby to me; (2) My job is usually interesting enough to keep me from getting bored; (3) It seems that my friends are more interested in their jobs; (4) I consider my job rather unpleasant; (5) I enjoy my work more than my leisure time; (6) I am often bored with my job; (7) I feel fairly well satisfied with my present job; (8) Most of the time I have to force myself to go to work; (9) I am satisfied with my job for the time being; (10) I feel that my job is no more interesting than others I could get; (11) I definitely dislike my work; (12) I feel that I am happier in my work than most other people; (13) Most days I am enthusiastic about my work; (14) Each day of work seems like it will never end; (15) I like my job better than the average worker does; (16) My job is pretty uninteresting; (17) I find real enjoyment in my work; and (18) I am disappointed that I ever took this job." (p. 309).

There are five responses for each of the 18 questions: strongly agree, agree, undecided, disagree, and strongly disagree. The five responses were placed immediately beneath each of the 18 questions.

Computation

The five responses were scored from 1 to 5, although the scoring varied with the format of the question. Questions 1, 2, 5, 7, 9, 12, 13, 15, and 17 were scored in the following manner: strongly agree 5, agree 4, undecided 3, disagree 2, strongly disagree 1. The remaining questions were scored in reverse manner: strongly agree 1, agree 2, undecided 3, disagree 4, strongly disagree 5. The scores for the 18 items were summed, and the larger the score, the higher the satisfaction. The scores range from 18 (low satisfaction) to 90 (high satisfaction). The range of scores for the sample of female office employees is 35 to 87; the mean score is 63.8 with a standard deviation of 9.4. The range of scores for the adult night school students is 29 to 89; the mean score is 70.4 with a standard deviation of 13.2 (pp. 308–310).

Validity

Two sets of data provide information about validity. First, the adult night-school students are divided into two categories, those employed in personnel occupations and those not employed in personnel occupations. Since the night-school course was concerned with personnel psychology, it was assumed that the students employed in personnel occupations would be more satisfied with their jobs than the students not so employed. This assumption is confirmed by the data. Second, the adult night-school students also completed a measure of job satisfaction previously developed by Hoppock (1935). The product-moment correlation between scores on the Hoppock blank (Form 11) and the Brayfield–Rothe index is 0.92 (p. 311).[5]

Reliability

The odd–even product-moment reliability coefficient computed for the sample of female office employees is 0.77, corrected by the Spearman–Brown formula to 0.87 (p. 311).

Comments

The comments are divided into two parts. First, we have some comments about the original Brayfield and Rothe article. Second, we have some updating comments based on the measurement review by Cook and his colleagues (1981, pp. 16–19).

We have four comments about the original article. First, Brayfield and Rothe's implicit definition of satisfaction seems to correspond quite closely to our definition of satisfaction. The way the members of the organization feel about their jobs (Brayfield and Rothe) seems to have essentially the same referent as the degree of affective orientation toward the organization (our definition). "Feel" and "affect" are often used interchangeably in the organizational literature. Second, the computational section indicates that the scoring varies with the format of the question. However, Brayfield and Rothe do not indicate the exact procedure. The scoring for the different questions is relatively easy to determine, but it would have been helpful if Brayfield and Rothe had explicitly indicated the scoring for the reader. Third, the presentation of the means, standard deviations, and ranges for the scores is helpful. Fourth, the index appears to have adequate validity and reliability.

Cook and his colleagues note that the original Brayfield–Rothe index has been used to study a variety of samples: civil service office employees; clerical workers; taxi drivers and nurses aides; part-time students working for master's degrees; academic and support staff in a school system; nursing, clerical, and support staff in a hospital; managers.[6] Eleven means are reported in the review by Cook et al. The lowest mean is 56.79 and the highest is 76.51; the mean of the means is 64.32. In the original Brayfield and Rothe article, means of 63.80 and 70.40 are reported. Six standard deviations are reported; their range extends from 8.62 to 14.98. The mean of the standard deviations is 10.78. The original Brayfield and Rothe article reports two standard deviations whose mean is 11.30.

A variety of data pertinent to validity and reliability are reviewed by Cook and his colleagues. Most significant for validity is the study of nursing, clerical, and support staff in a hospital where the Brayfield–Rothe index, as expected, correlates negatively with quitting (−0.21) and thinking of quitting (−0.54). Four reliability coefficients are reported; the mean of the coefficients, which range from 0.78 to 0.99, is 0.89. The comparable coefficient from the original Brayfield and Rothe article is 0.87. The index appears to have adequate validity and reliability.

Source

Brayfield, A.H., and H.F. Rothe. 1951. An index of job satisfaction, *J. Appl. Psychol.* 35:307–311.

QUINN AND STAINES (1979)

Description

This survey is part of a continuing effort to describe, interpret, and monitor the quality of employment in the United States. The present survey, as were two previous ones, was conducted by the Survey Research Center of the University of Michigan and was funded by the United States Department of Labor. A representative cross-sectional sample of 1515 adult workers was used for the analysis.[7] "Adult" is defined as 16 years or older and to be a "worker" means to be currently employed for pay 20 or more hours per week.

Definition

Satisfaction is defined as "affective reaction to the job" (p. 205). This definition is intended to refer to what Quinn and Staines label as "facet-free job satisfaction" (p. 205).

Data Collection

The survey was conducted by interviewers in the homes of the respondents. Questions were read to the respondents, who then indicated their views by selecting the appropriate cards.

The five questions for facet-free job satisfaction are as follows: "(1) All in all, how satisfied would you say you are with your job—very satisfied, somewhat satisfied, not too satisfied, or not all satisfied? (2) (PHRASE IN SAME SEX AS R) If a good friend of yours told you (he/she) was interested in working in a job like yours for your employer,[8] what would you tell (him/her)? Would you strongly recommend this job, would you have doubts about recommending it, or would you strongly advise (him/her) against this sort of job? (3) Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide? Would you decide without any hesitation to take the same job, would you have some second thoughts, or would you decide definitely not to take the same job? (4) If you were free to go into any type of job you wanted, what would your choice be—would want the job you have now, would want to retire and not work at all, would prefer some other job to the job you have now?[9] (5) In general, how well would you say that your job measures up to the sort of job you wanted when you took it? Would you say it is very much like, somewhat like, or not very much like the job you wanted when you took it?" (pp. 335–336).

Given the interview nature of the survey, the responses are mostly contained in the questions read to the respondents. To permit replication, however, the following are the exact responses presented by the interviewers to the respondents, on cards: (1) very satisfied, somewhat satisfied, not too satisfied, not satisfied at all; (2) strongly recommend it, have doubts about recommending it, advise (him/her) against it; (3) decide without hesitation to take the same job, have some second thoughts, decide definitely not to take the job; (4) would want the job you have now, would want to retire and not work at all, would prefer some other job to the job you have now; (5) very much like, somewhat like, not very much like" (pp. 335–336).

Computation

The scoring for the responses follows the sequence of the responses. Question (1), for instance, is scored 5, 3, 1, 1, respectively, for very satisfied, somewhat satisfied, not too satisfied, and not at all satisfied. A score of 5 always signifies the most satisfaction and 1 the least. The index was constructed by summing the scores for the five questions. No weights were used in summing the questions.

The scoring for the five questions is as follows: (1) 5, 3, 1, 1; (2) 5, 3, 1; (3) 5, 3, 1; (4) 5, 1, 1; (5) 5, 3, 1.[10] A mean of 3.66 and a standard deviation of 1.02 are reported (p. 220).

Validity

No data are presented with which to assess validity.

Reliability

A Cronbach Alpha of 0.77 is presented.

Comments

As with the previous selection, the comments are divided into two parts, one setting forth our opinions of the Quinn and Staines measure, and two, an update provided by the measurement review compiled by Cook and his colleagues (1981, pp. 28–30).

We have five observations to make regarding the Quinn and Staines measure. First, the use of a national sample is impressive. The development of general measures requires a heterogenous sample, and the sample used by Quinn and Staines certainly meets this requirement. Especially helpful are the comparisons that can be made with the 1969 and 1973 samples, both of which were also national in scope. The items for satisfaction are the same for 1973 and 1977; with some adjustments, the 1969 results can also be compared with the two later surveys. Second, the definition of satisfaction used by Quinn and Staines is the same as the one we propose. The only difference is that our definition is intended to refer to both facet-free and facet-specific satisfaction. Third, the researchers provide no justification for their scoring. Especially puzzling is the scoring for the first and fourth questions, where scores of "one" are used for two responses. Other researchers are constrained to use this scoring if they wish their results to be comparable to results provided by Quinn and Staines. Fourth, our greatest concern is with the lack of systematic data about validity. We are impressed by the amount of time and effort that has gone into the development of this index. Only the Job Descriptive Index and the Minnesota Satisfaction Questionnaire, both of which are discussed later, have been more intensively researched. We would be even more impressed, however, with systematic data about validity. Fifth, the reliability of the index is adequate.

The measurement review by Cook and his colleagues (1981) cites three studies that used some of the Quinn and Staines questions. Occupational compositions in these three studies are not identified. The means and standard deviations of the studies are not comparable to the descriptive statistics provided by Quinn and Staines, due to differences in the composition of the indices. Two pieces of data are pertinent to validity. The index in one of the studies correlated, as expected, −0.22 with role ambiguity and 0.43 with work depression. A Spearman–Brown coefficient of 0.80 is reported; this compares favorably with the 0.77 reported by Quinn and Staines.

Our view is that this is the weakest measure of the four selected for this chapter. An immense amount of work has gone into the development of this index and we believe that, in the long run, it will be found to have adequate psychometric properties. In the meanwhile, researchers who use this index can compare their results to extensive data from three national surveys. More national surveys will in all likelihood be forthcoming.

Source

Quinn, R.P., and G.L. Staines. 1979. *The 1977 Quality of Employment Survey* (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan).

SMITH, KENDALL, AND HULIN (1969)

Description

The researchers' purpose was to develop measures of job satisfaction and retirement satisfaction, but we focus only on the measure of job satisfaction. Four studies, using a total of 988 subjects, were used to develop the measures. A final study using 2662 subjects was conducted to obtain average satisfaction scores. These studies are carefully described by Smith and her colleagues.

Definition

Job satisfaction is defined as ". . . the feelings a worker has about his job . . ." (p. 6).[11] Five dimensions of job satisfaction are distinguished: work, supervision, pay, promotions, and coworkers. Both descriptive and evaluative components are included in all five dimensions.

Data Collection

The data were collected by means of a questionnaire. Five sets of questions (each set presented on a separate page) were used to collect data about the five dimensions of job satisfaction. Sample items from each of the five dimensions are as follows:[12]

Think of your present work. What is it like most of the time? In the blank beside each word given below, write

_Y_ for "Yes" if it describes your work

_N_ for "No" if it does NOT describe it

_?_ if you cannot decide

WORK ON PRESENT JOB

____ Routine

____ Satisfying

____ Good

____ On your feet

PRESENT PAY

Think of the pay you get now. How well does each of the following words describe your present pay? In the blank beside each word, put

__Y__ if it describes your pay

__N__ if it does NOT describe it

__?__ if you cannot decide

____ income adequate for normal expenses

____ insecure

____ less than I deserve

____ highly paid

OPPORTUNITIES FOR PROMOTION

Think of the opportunities for promotion that you have now. How well does each of the following words describe these? In the blank beside each word put

__Y__ for "Yes" if it describes your opportunities for promotion

__N__ for "No" if it does NOT describe them

__?__ if you cannot decide

____ promotion on ability

____ dead-end job

____ unfair promotion policy

____ regular

____ promotions

SUPERVISION ON PRESENT JOB

Think of the kind of supervision that you get on your job. How well does each of the following words describe this supervision? In the blank beside each word below,
put

__Y__ if it describes the supervision you get on your job

__N__ if it does NOT describe it

__?__ if you cannot decide

____ impolite

____ praises good work

____ influential

____ doesn't supervise enough

PEOPLE ON YOUR PRESENT JOB

Think of the majority of the people that you work with now or the people you meet in connection with your work. How well does each of the following words describe these people? In the blank beside each word below, put

__Y__ if it describes the people you work with

__N__ if it does NOT describe them

__?__ if you cannot decide

____ boring

____ responsible

____ intelligent

____ talk too much

Computation

Scoring for this measure is obtained from Smith, as indicated in the source material at the end of this section. Smith and her colleagues refer to their measure as the Job Descriptive Index (JDI). The researchers present means and standard deviations for the JDI for large samples of men and women pooled across all companies studied; these statistics are contained in Table 26-1.

Validity

Smith and her colleagues assessed convergent and discriminant validity by means of a multitrait–multimethod matrix. The results show consistent convergent and discriminant validity.

Reliability

The estimated split-half correlation coefficients, using a sample of 80 male employees from two electronics plants, are shown in Table 26-2.

Comments

As with the Brayfield–Rothe measure, we offer comments about the original work on the JDI and then update this with material from a review of the JDI by Schriesheim and Kinicki (1983).

TABLE 26-1 Means and Standard Deviations for Male and Female Employees Pooled Across 21 Plants

	Males			***Females***		
Scale	***N***	**Mean**	**Standard deviation**	***N***	**Mean**	**Standard deviation**
Work	1971	36.57	10.54	638	35.74	9.88
Pay	1966	29.90	14.53	635	27.90	13.65
Promotions	1945	22.06	15.77	634	17.77	13.38
Supervision	1951	41.10	10.58	636	41.13	10.05
Coworkers	1928	43.49	10.02	636	42.09	10.51

TABLE 26-2 Split-Half Correlation Coefficients

Scale	Correlation of random split halves	Correlations corrected to full length by Spearman – Brown formula
Work	0.73	0.84
Pay	0.67	0.80
Promotions	0.75	0.86
Supervision	0.77	0.87
Coworkers	0.78	0.88

First, "the feelings a worker has about his job" (the definition of job satisfaction by Smith and her colleagues) is very similar to our "positive affective orientation toward employment by the organization." The different dimensions of job satisfaction used by the researchers encompass most aspects of organizational membership. Organizational researchers often use "feelings" and "affect" interchangeably. Second, the reader may have noticed that Smith and her colleagues have no statistic for overall satisfaction. The lack of such a statistic is consistent with the dimensional approach to the study of job satisfaction used by the researchers. Third, Smith et al. include means, standard deviations, and averages (termed "norms" by the researchers) for the JDI. These data should greatly facilitate comparative research.

The following comments represent the assessment of Schriesheim and Kinicki (1983), who have undertaken an extensive review of the measurement characteristics of the JDI. The validity of the measure has received considerable attention. Both a theoretical and an empirical evaluation of the content validity are presented. Since the five dimensional measures contain a mixture of evaluative and descriptive items that are not extraneous to the two theoretical domains (evaluative-general-long-term domain and descriptive-specific-short-term domain), the authors (Schriesheim and Kinicki) conclude that the JDI possesses content validity from a theoretical perspective. With regard to the empirical evaluation of content validity, numerous factor analyses, although sometimes indicating more than five factors, never split the items into descriptive and evaluative components. Thus, both types of items seem to measure the affect respondents have about their employment situation.

Construct validity also has been extensively assessed. Regarding concurrent validity, the JDI has consistently been found to be significantly related to the theoretically meaningful variables. Based on a review of turnover, where the JDI is the independent variable, the authors conclude that the measure exhibits predictive validity. Finally, construct validity is also supported, because the correlations with other measures of the same construct are positive and large (convergent validity), while the correlations with measures of other constructs are smaller (discriminant validity).

With regard to reliability, there is an extensive amount of evidence about both internal consistency and test–retest reliability. For the five dimensions, the internal consistency coefficients have been consistently larger than 0.70, with many of the studies producing correlation coefficients greater than 0.80. Most of the test–retest examinations have been long-term assessments, where the likelihood of change in the actual trait is more likely. Even here, however, the average correlations have been in the 0.55 to 0.66 range. Overall, then, the authors conclude that the JDI exhibits very favorable validity and reliability characteristics.

They also examine what they refer to as minor psychometric properties. Five such properties are considered: social desirability and leniency, agreement response tendency, confusion effects, halo effect, and skewdness and equality of response intervals. Although they conclude that some additional research would be informative regarding these potential problems, the available data indicate that the JDI does not exhibit any serious shortcomings or weaknesses.

Schriesheim and Kinicki also address the theoretical issue of having both descriptive and evaluative items in the index. It has been argued that some of the empirical relationships obtained in research using the JDI are spurious because evaluative and descriptive scale items overlap in both the independent and dependent variables. The authors conclude that this is not a problem, since the descriptive and evaluative items do not factor out as separate dimensions, but they also believe additional research is necessary.

Finally, they mention two inappropriate uses of the JDI. First, use of the JDI as a global measure (combining the five dimensions) is theoretically inappropriate and cannot be justified empirically, since the interscale coefficients are only moderate in magnitude. Second, more and more researchers are deleting or modifying items; this should not be done until research on the consequences is undertaken.

Source

Smith, P.C., L.M. Kendall, and C.L. Hulin. 1969. *The Measurement of Satisfaction in Work and Retirement* (Chicago: Rand McNally). The copyright for the Job Descriptive Index is owned by Bowling Green State University. The complete forms, scoring key, instructions, and norms can be obtained from Dr. Patricia C. Smith, Department of Psychology, Bowling Green State University, Bowling Green, Ohio 43403.

WEISS, DAWIS, ENGLAND, AND LOFQUIST (1967)

Description

This manual presents both a short form and a long form to measure job satisfaction. The two forms are referred to as the Minnesota Satisfaction Questionnaire (MSQ) and are based on a theory of work adjustment presented in Lofquist and Dawis (1969). We focus only on the short form. The sample for the short form consisted of individuals from six occupations: assemblers ($N = 432$), clerks ($N = 227$), engineers ($N = 387$), janitors–maintenance men ($N = 242$), machinists ($N = 240$), and salesmen ($N = 195$). All of the 1723 individuals in the sample lived in the Minneapolis–St. Paul area.

Definition

Job satisfaction is not defined in the manual. It is defined in the related work by Lofquist and Dawis (1969, p. 176) as "fulfillment of the requirements of an individual by the work environment." Intrinsic, extrinsic, and general satisfaction are implicitly defined by the instruments of data collection, as will be indicated in discussion of the calculations.

Data Collection

The form consists of 20 questionnaire items.[13] Preceding the items is the statement, "On my present job, this is how I feel about:". The items are: "(1) Being able to keep busy all the time; (2) The chance to work alone on the job; (3) The chance to do different things from time to time; (4) The chance to be 'somebody' in the community; (5) The way my boss handles his/her workers; (6) The competence of my supervisor in making decisions; (7) Being able to do things that don't go against my conscience; (8) The way my job provides for steady employment; (9) The chance to do things for other people; (10) The chance to tell people what to do; (11) The chance to do something that makes use of my abilities; (12) The way company policies are put into practice; (13) My pay and the amount of work I do; (14) The chances for advancement on this job; (15) The freedom to use my own judgment; (16) The chance to try my own methods of doing the job; (17) The working conditions; (18) The way my coworkers get along with each other; (19) The praise I get for doing a good job; and (20) The feeling of accomplishment I get from the job" (p. 111).

Each of the items has five responses: very dissatisfied, dissatisfied, I can't decide whether I am satisfied or not, satisfied, and very satisfied. The sequence of responses as presented from left to right is as indicated, from "very dissatisfied" to "very satisfied."

Computation

The scoring is from one to five, with "very dissatisfied" scored as one and "very satisfied" scored as five. An index score was obtained by summing the individual items, with no weights attached.[14] Three indices of satisfaction were used: intrinsic (items 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16, 20), extrinsic (items 5, 6, 12, 13, 14, 19), and general (all items). Means and standard deviations, respectively, are provided (p. 24) for each of the three indices for the 1723 individuals in the sample: intrinsic satisfaction (47.14 and 7.42), extrinsic satisfaction (19.98 and 4.78), and general satisfaction (74.85 and 11.92).[15]

Validity

Two sets of data are helpful in assessing validity. First, differences in mean satisfaction scores for individuals in the six occupations studied are statistically significant for each of the three indices. Occupational differences in variability are not statistically significant for any of the indices. "These results," Weiss and his colleagues state, "parallel those obtained for the long-form MSQ and those generally found in studies of job satisfaction" (p. 25). The data thus indicate construct validity. Second, according to the theory of work adjustment (Lofquist and Dawis 1969), "satisfaction" and "satisfactoriness" are different concepts. Satisfactoriness is defined as "fulfillment of the requirements of the work environment by the individual" (Lofquist and Dawis 1969, p. 176). Satisfaction has already been defined. Data thus reflecting this postulated difference between satisfaction and satisfactoriness would also support construct validity. Data not included in the manual "support the expectation" that satisfaction and satisfactoriness are different concepts. (Weiss et al. 1967, p. 26).

Reliability

Median Hoyt internal reliability coefficients are reported (p. 24) for each of the indices of satisfaction: intrinsic 0.80, extrinsic 0.80, and general 0.90. Weiss and his colleagues believe that the reliability coefficients obtained are "high" (p. 23).

Comment

Our comments are divided into two parts. The first consists of our opinions about the instrument and the second is an update of research reported in the measurement review by Cook and his colleagues (1981, pp. 21–25).

We have five comments about the instrument. First, it is not clear whether or not the explicit definition of satisfaction by Lofquist and Dawis corresponds to our concept. The use of "feel" in the lead-in statement indicates that the questions may be assessing our concept of satisfaction, since "feel" and "affect" (our label) are widely used as interchangeable terms. Second, it is satisfying to observe the link between measurement and theory exhibited by this research. Measurement research is often guided by little theory, a condition that hinders cumulation of knowledge in the study of organizations. Although theoretical research pertinent to the instrument may be presented elsewhere, this slight inconvenience is a small price to pay for a theoretically based measurement.

Third, the MSQ is too long for many research projects, especially those not studying satisfaction as the dependent variable. We did not use the questions in our research on absenteeism and turnover (Price and Mueller 1981; 1986) because they require an entire page on the questionnaire. Our research sought to restrict the measurement of each concept to a maximum of one-half page on the questionnaire. Fourth, Weiss and his colleagues' treatment of measurement is very thorough. Not many instruments, as this handbook has illustrated, are supported by the type of data provided here. Fifth, the provision of descriptive statistics is excellent. Especially helpful is the presentation of normative and demographic data about individuals in each of the six occupations in the sample.

Cook and his colleagues (1981) note that the instrument has been used on a variety of samples: scientists and engineers, police officers, social service counselors, telephone operators, machinists and technicians, soldiers, clerical employees, civil service workers and retirees, project engineers, and office employees.[16] These samples provide more diversity than the narrow sample that was used to develop the measure.

Descriptive statistics are reported only for general satisfaction.[17] Four means, from 72.10 to 83.22, are cited; the mean of the means is 75.93. The mean for general satisfaction for the original sample of 1723 is 74.85. Four standard deviations, ranging from 6.76 to 13.68, are reported, with the mean of the standard deviations being 10.99. In the original sample, the standard deviation is 11.92.

With respect to validity, the following correlations between intrinsic and extrinsic satisfaction are reported: 0.63, 0.83, 0.64, 0.15, and 0.67.

Most of the data for validity, however, pertain to general satisfaction. The following data for general satisfaction are relevant: a correlation of 0.71 with the sum of five measures from the Job Descriptive Index; means of 82.90, 81.00, and 74.00 for, respectively, high, medium, and low perceived participation in goal setting; a correlation of −0.25 with size; a correlation of 0.24 with ratings of morale; and a significant association (no statistics are cited) with perceived equity of pay rules and work pace. Most of this data pertain to construct validity.

For reliability, the following coefficients (mostly alphas) are cited for intrinsic satisfaction: 0.80, 0.81, 0.90, 0.80 plus, and 0.88. Test−retest coefficients of 0.50 and 0.56 are reported. The following coefficients (again mostly alphas) are cited for extrinsic satisfaction: 0.84, 0.78, 0.85, 0.80 plus, and 0.84. For general satisfaction, coefficients (still mostly alphas) of 0.74 and 0.92 are set forth. Test−retest coefficients of 0.63 and 0.59 are indicated.

Cook and his colleagues (1981) believe that the index of general satisfaction is "a sound measure" (p. 24). However, they have some reservations about the indices of intrinsic and extrinsic satisfaction. We agree with the Cook et al. assessment of the measures. Their reservations about intrinsic and extrinsic satisfaction may be bypassed by only using the index of general satisfaction, a practice followed by many researchers.

Source

Weiss, D.J., R.V. Dawis, G.W. England, and L.H. Lofquist. 1967. *Manual for the Minnesota Satisfaction Questionnaire* (Minneapolis: Industrial Relations Center, University of Minnesota). Both the long and the short form of the MSQ are copyrighted. Permission to use either form can be obtained by writing to the Work Adjustment Project, Industrial Relations Center, University of Minnesota, Minneapolis, Minnesota 55455.

NOTES

1. This definition is based on Vroom (1964, pp. 99−105). Also very helpful is the comprehensive review by Locke (1976).

2. These particular dimensions come from the research by Smith and her colleagues (1969, p. 83). No set of dimensions is widely accepted at the present time in the study of satisfaction.

3. The view toward the "Herzberg controversy" expressed in the 1972 edition of this handbook (Price 1972b, pp. 156−157) still seems to be correct. See,

for example, Lawler (1973, p. 70). The controversy does not warrant a discussion here.

4. The original 18 items contain a trial item and the additional directive to "work out the sample item numbered (0)" (p. 309). Because the trial item is not a necessary part of the instrument, it has been omitted here.

5. Brayfield and Rothe also suggest that their index has face validity; they note a high degree of consistency among the judges used to construct the index (p. 310).

6. These comments ignore the studies that use modified versions of the Brayfield–Rothe measure. It was not possible to identify some of the occupational groups in the studies reviewed by Cook and his colleagues.

7. Also included in the survey were 1086 respondents from a 1973 survey. Our focus in this selection is on the 1515 respondents of the 1977 survey.

8. The "for your employer" was omitted for self-employed respondents. Information about this omission comes from the text (pp. 210–211) rather than from the interview schedule.

9. There is an inconsistency between the text and the interview schedule concerning the fourth question. The text clearly includes the fourth question as we have reproduced it (pp. 210–211). Quite a different fourth question, however, is included in the interview schedule (p. 335). We cannot even find the fourth question of the text in the interview schedule. We follow the text for.the fourth question because the discussion is so clear concerning the composition of the index. Cook and his colleagues (1981) also follow the text rather than the interview schedule as reproduced.

10. There is a scoring inconsistency between the text and interview schedule concerning the first question. We follow the text, as do Cook et al. (1981), for the same reason that we use the text version of the fourth question.

11. Smith and her colleagues also use the term "affect." (See p. 87.)

12. Permission could not be obtained to reproduce all the items.

13. There is also another page of instructions preceding the 20 questionnaire items, and following the instructions the five responses are defined. If the copyright restrictions require inclusion of the instructions and definitions, then the short form will probably be too long for most research projects studying satisfaction.

14. Weiss and his colleagues recommend that the raw scores be converted into percentiles, and tables are provided for the conversion. Most researchers, however, use the raw scores. The review by Cook and his colleagues (1981) does not even mention the use of percentile scores.

15. Descriptive statistics are also provided for individuals in each of the six occupations used in the sample.

16. Some of the occupations in the samples cited by Cook et al. are not identified.

17. Means and standard deviations of 3.66, 0.96 and 2.89, 0.93 are provided for intrinsic and extrinsic satisfaction, respectively, (p. 24). These statistics must be errors, since the manual cites much larger means (47.14 and 19.98) and standard deviations (7.42 and 4.78) for intrinsic and extrinsic satisfaction.

27

SIZE

Definition

Size is the scale of operations in an organization (Price 1972b, p. 174). Although number of personnel, of one variety or another, is the most widely used indicator, other common indicators of size are number of beds (for hospitals), number of students (for schools), sales volume (for businesses), and assets. Our definition is premised on the assumption that different indicators are highly correlated.

A different conception of size comes from Kimberly (1976), who has argued that size is a multidimensional concept consisting of four aspects: physical capacity (number of beds is an illustration), personnel available (number of employees, for example), inputs or outputs (sales volume), and discretionary resources (assets). In Kimberly's view, these four aspects of size are not necessarily highly correlated. Although there are data supporting both our view (Agarwal 1979a; 1979b; Child 1973) and Kimberly's view (Gupta, 1980; Martin 1979), the existing data do not convincingly support either, suggesting the need for more research.

Measurement

Blau and his colleagues use size extensively in their research, so it is not surprising that our measurement selection is one of their studies. The 1972 edition of this handbook also used a measurement selection by two of Blau's colleagues, Schoenherr and Fritz (Price 1972b, pp. 175–176).

Discussion of size raises the issue of how to distinguish the organization from its environment—how, in other words, to distinguish members of the organization from nonmembers. This issue is especially critical with personnel, the most common indicator of size, since there are various types of personnel and it is not always clear whether or not they are members of the organization. In Chapter 4, Autonomy, we indicate that individuals who are legitimately subject to organizational norms and sanctions are considered by us to be members of an organization. With this criterion, employees, students, patients, and physicians are viewed as members of their respective organizations, whereas customers and members of governing boards are not considered to be organizational members. Even though most discussions of size do not explicitly treat the issue of defining the boundaries of an organization, the issue is important and should be explicitly treated.

BLAU AND SCHOENHERR (1971)

Description

Descriptive information about this study of 53 state employment security agencies is provided in Chapter 3 on Administrative Intensity. Measurement selections from this study are also presented in Chapter 8 on Complexity and Chapter 14 on Formalization.

Definition

Size is defined as "the scope of an organization's responsibilities" (p. 55). "Volume" is sometimes used by Blau and Schoenherr as a synonym for "scope."

Data Collection

The number of full-time personnel was used as the indicator of an organization's scope of responsibility (p. 374). Information about the number of full-time personnel was obtained from "the payroll print-out or some official current listing of personnel such as an employee register, manning tables, or staffing patterns" (p. 381). Since the number of personnel fluctuates, the listing was obtained as of a specific date, the first quarter of 1966 in this study.

Computation

As just indicated, the number of full-time personnel was used as the indicator of size. If the correlation of a variable with size was increased by 0.10 or more when size is logarithmically transformed, then this transformed version was used (p. 176). The mean and standard deviation for the untransformed measure for the 53 agencies are 1,195 and 1,166, respectively (p. 374).

Validity

Construct validity is supported, since the results indicate that increases in size produce, at a declining rate, more complexity (pp. 55–81). A highly complex organization is characterized by many occupational roles, subunits, levels of authority, and operating sites. Blau and Schoenherr use "complexity" and "differentiation" interchangeably.

Reliability

No data about reliability are presented.

Comments

Since this study is commented on elsewhere, the focus in this chapter is on material pertaining only to size. Although they use different terms, Blau and Schoenherr's view regarding size is identical to ours. There is both a general definition ("scope of an organization's responsibilities") and a specific indicator ("number of full-time personnel").

Two points about using the number of full-time personnel as the indicator of size are pertinent. First, no rationale is offered for excluding part-time employees from the calculations. This exclusion seems unwise, if practiced generally, since some organizations such as hospitals often employ sizable numbers of part-time employees. Two part-time employees could, for example, have been equated with one full-time employee (Van de Ven and Ferry 1980, p. 116). This equation is naturally crude, since part-time employees work varying amounts of time. Second, Blau and Schoenherr are properly flexible in their use of logarithmic transformations. The transformations are sometimes justified, since size is often related in a nonlinear manner to the variables being examined. If nonlinearity is not a problem, and Blau and Schoenherr's 0.10 criterion is one way to assess this, then there is no reason to perform the transformation.

Source

Blau, P.M., and R. A. Schoenherr. 1971. *The Structure of Organizations* (New York: Basic Books).

28

STANDARDIZATION

Definition

Standardization is uniformly of operating procedures.[1] This uniformity is commonly encountered in the record-keeping system of an organization, where an attempt is usually made to record similar transactions in the same manner. For instance, employees who wish to travel at the expense of the organization must complete an identical set of forms before travel can be undertaken and they can be reimbursed for their expenses.

We limit standardization to "operating procedures," whereas historically plant and equipment have also been included in the definition (Chandler 1962; Noble 1977). The term "interchangeability," used in discussions of equipment, has the same meaning as standardization. The components of a piece of equipment are interchangeable if they are standardized. Primarily because research by organizational scholars focuses more often on operating procedures than on plant and equipment, we have limited our definition to operating procedures.

It is important to distinguish standardization from formalization and routinization. Uniformity of operating procedures is formally established by most organizations. Sets of explicit rules and regulations, generally written, are typically issued to establish the preferred uniformity. This is not always the case, however. Uniformity can emerge within an organization informally, usually over a period of time, without the support of a set of explicit and written rules and regulations. Since standardization can emerge formally or informally, it must not be confused with formalization.

A great many highly standarized jobs are also highly routinized. Most jobs on automobile assembly lines would be examples of highly standardized and routinized jobs. It is possible, however, for jobs to be highly standardized yet quite nonroutinized. A job may, for instance, consist of a series of different but highly standardized tasks. When the different tasks are part of the same job, the result is a job that is quite nonroutinized. The work of many technicians—laboratory and x-ray technicians would be illustrations—is often highly standardized in its component tasks but quite nonroutinized when viewed as a unit. Although they probably covary most of the time, standardization must not be confused with routinization.

Measurement

We use the research by Withey and his colleagues (1983) in Chapter 25 for our measure of routinization. Our argument there is that their measure of "exceptions" captures our concept of routinization. In this chapter we argue that the Withey et al. measure of "analyzability" captures our concept of standardization. Since routinization and standardization are used more widely as labels than exceptions and analyzability, we prefer the former.

Our review of the measurement literature has revealed three questionnaire items that, though not generally intended to measure standardization, in our view do so. The section on additional measurement suggestions lists and discusses these three questionnaire items. Our hope is that with some revisions these three items might be combined into an index.

WITHEY, DAFT, AND COOPER (1983)

Description

This measurement study of a Canadian government agency is described in Chapter 25 on Routinization. Twenty-three work units were the objects of analysis in this study.

Definition

Our concern is with "analyzability," an aspect of Perrow's concept of technology (1967; 1970). If technology is defined as the conversion of input into output (Withey et al. 1983, p. 46), then analyzability exists when the work "can be reduced to mechanical steps" and "participants can follow an objective procedure to solve problems" (p. 46). Withey and his colleagues, it should be stressed, do not use the term standardization.

Data Collection

As in Chapter 25 on Routinization, the focus here is on the improved measures developed by Withey and colleagues. Analyzability was measured by five questionnaire items. The first question is preceded by the introductory statement, "The following questions pertain to the normal, usual, day-to-day pattern of work carried out by yourself and the people in your work-unit. Please circle the appropriate answers."[2] The first question is, "To what extent is there a clearly known way to do the major types of work you normally encounter?"

Another introductory statement precedes the second, third, fourth, and fifth questions: "This part includes more questions about the nature of your normal, day-to-day work activities. Please circle the appropriate answer to each of the following questions." The second question asks, "To what extent is there a clearly defined body of knowledge or subject matter which can guide you in doing your work?" The third question is, "To what extent is there an understandable sequence of steps that can be followed in doing your work?" The fourth question is, "To do your work, to what extent do you actually rely on established procedures and practices?" The fifth question is, "To what extent is there an understandable sequence of steps that can be followed in carrying out your work?"

The responses are the same for all five questions. Each question has seven numbers (1−7), displayed horizontally. One number is to be circled for each response. There are three phrases above the seven numbers: to a small extent, to some extent, and to a great extent. The first phrase is above the 1, the second is above the 4, and the third is above the 7.

Computation

Scores of 1 and 7 signify, respectively, low and high amounts of analyzability. An individual's score was obtained by summing the scores for the five questions; the score for a work unit was obtained by summing the scores of its individual members and dividing by the number of members.

Descriptive statistics are not provided for the 23 work units studied. Means, however, are provided (p. 60) for four units: computer operations (2.3), methodology (4.4), training package (3.2), and systems analysis (2.7).

Validity

Five sets of data are pertinent to the assessment of validity. First, a confirmatory factor analysis yielded a factor that is clearly interpretable as analyzability. The average loading for the five items on the factor is 0.66 (p. 59). Second, a correlation of 0.58 was obtained (p. 59) between the analyzability index and the task variety measure of the Job Characteristics Inventory (Sims et al. 1976). Low discriminant validity is indicated because the correlation should have been lower, given that task variety is not the same concept as analyzability.

Third, both the workers and supervisors described the technology of the work units. Agreement between these two categories of employees is a low 0.21, demonstrating little convergent validity (p. 59). Fourth, the analyzability index is in substantial agreement (0.85) with the six original measures examined, demonstrating high convergent validity (p. 59). Fifth, the scores for analyzability are compared with the descriptions of technology provided by two external raters (p. 59), both of whom were professors who had experience in teaching and research with Perrow's work. There is considerable agreement (0.49) between the workers and the external raters (p. 59). Based on these data Withey and his colleagues believe that the measure of analyzability displays "reasonable psychometric properties" (p. 61). They recognize, however, that the index of analyzability is not quite as psychometrically acceptable as the index of exceptions, which is presented in Chapter 25 on Routinization.

Reliability

The Cronbach Alpha for the new measure of analyzability is a very acceptable 0.85 (p. 59).

Comments

The comments made regarding exceptions in Chapter 25, on Routinization, also apply to analyzability. What is most debatable is our use of the index of analyzability to measure standardization. This use is our only concern in these comments. Withey and his colleagues, let it be noted again, do not use the label of standardization in the report of their research. They explicitly label their concept "analyzability" and base it on Perrow's work.

We have had considerable difficulty finding an index of standardization that meets our selection criteria. We suggest that the new index Withey et al. developed for analyzability is a measure of standardization. Let us examine the Withey et al. questions with our introductory discussion of standardization in mind. We suggest that an organization with a highly uniform set of operating procedures will be one where "there is a clearly known way to do" most work; where "there is a clearly defined body of knowledge" to guide the work; where there is "an understandable sequence of steps" that can be followed in doing the work; and where considerable reliance can be placed on "established procedures and practices" in performing the work.[3] In short, the questions Withey and his colleagues developed actually assess standardization as traditionally defined. Finally, since "standardization" as a label has a much longer history than analyzability, our preference is for standardization.

Source

Withey, M., R.L. Daft, and W.H. Cooper. 1983. Measures of Perrow's work unit technology: An empirical assessment and a new scale, *Academy of Management J*. 26:45–63.

ADDITIONAL MEASUREMENT SUGGESTIONS

The three questions in this selection, as indicated in the introductory comments for this chapter, were not really intended as measures of standardization. Role ambiguity is the intended concept for the first question, while the second question is part of an index intended to measure standardization. This second measure, however, confuses standardization and formalization—a confusion common in the literature—and we have selected the question in the index that assesses standardization. Structuring of work attitudes is the focus for the third question.

The first question is as follows: "On my job, whatever situation arises, there are procedures for handling it" (Beehr 1976, p. 36). Four response categories are used: "very true, somewhat true, a little true, and not true at all." "Very true" should be scored as four and "not true at all" should be score as one.

The second question asks, "To what *extent* did you follow *standard operating procedures* or practices to do your major tasks the past three months?" (Van deVen and Ferry 1980, p. 162). Five responses are used for this question: "to no extent," "little extent," "some extent," "great extent," and "very great extent." "To no extent" should be scored as one and "very great extent" should be scored as five.

The third question is, "Whatever situation rises, we have procedures to deal with it" (Zeitz 1983, p. 1104). "Agree" and "Disagree" are the responses used for this question and should be scored as two and one, respectively.

We have three suggestions regarding construction of an index with these three questions. First, a fifth response should be added to the first question, to keep its weight in the index equal to the weights given the other two questions. Second, we see no reason for using "the past three months" in the second question. The past three months could have been an unusual period for the respondents. The question could perhaps be modified in the following manner: "To what extent do you generally follow standard operating procedures as you do your major tasks?" Third, the dichotomous format of the third question should be changed to the five-part Likert format of the first two questions, with "strongly agree" scored as five and "strongly disagree" as one.

NOTES

1. This definition is based on the work of Pugh and his colleagues (1968), and thus represents the work of the Aston Group.

2. The source for the quotes in this section is the questionnaire provided to us by Michael Withey and Richard Daft.

3. The fifth question is not used in this paragraph because it is almost identical to the third question, which is used.

29

TURNOVER[1]

Definition

Turnover is the degree of individual movement across the membership boundary of an organization. The individuals involved are employees, and the movement can be either into (accessions) or out of (separations) the organization. Most research on turnover examines separations, and this is our focus. In Chapter 4, on Autonomy, we indicated that we consider the members of an organization to be the individuals who are legitimately subject to the norms and sanctions of the organization. Literature dealing with separations from an organization is often found under the labels of attrition, exits, mobility, migration, and succession.

Voluntary and involuntary turnover are commonly distinguished. Turnover initiated by an individual is voluntary turnover. "Quits" is probably the most frequent designation for voluntary turnover. Involuntary turnover is movement not initiated by the individual, and examples are dismissals, layoffs, most retirements, and deaths. Research on turnover generally examines voluntary movement, and this is our focus.

Measurement

There are many measures of turnover, most of which are seldom used, and we see little reason to cite all of them. What we will do instead is to recommend two measures that we think are appropriate for organizational scholars to use. Finally, we will offer some comments regarding our experience collecting data about voluntary turnover from organizations. Most turnover data are collected from records, and there are problems with this procedure. Although we want to encourage greater use of organizational records for measurement, these records must be used critically. Our comments will attempt to promote a critical use of records in the measurement of turnover.

The two measures we recommend are the "quit rate" and the "average length of service of voluntary leavers."[2] These two measures will be described, criticized, and compared.

Quit Rate

The quit rate is computed in the following manner:

$$\frac{\text{number of employees who leave voluntarily during the period}}{\text{average number of employees during the period}}$$

First consider the numerator. Voluntary turnover has been discussed and requires no further elaboration. The period of time for the computation varies; the usual period is one year. Turning next to the denominator, the average number of employees can be computed in different ways. If the quit rate is to be computed for a year, and if there is a large fluctuation in the number of employees during the period, then the average number of employees on the fifteenth day of each month can be used. If there is little fluctuation in the number of employees, the average for a year can be computed by adding the employees as of January 1st to the employees as of December 31st and dividing by two. The average can of course be computed in other ways.

There are three advantages to the quit rate. First, it is relatively easy to compute. It takes some care to obtain a list of voluntary leavers; the task, however, is manageable, as we will indicate at the end of this section. It is generally no major problem to obtain, with one procedure or another, the average number of employees during a period of time. Second, the rate is readily understandable. Understanding is enhanced by the common use of percentages, with a high percentage indicating high turnover. A 50-percent quit rate (really a 0.50 rate) is higher than a 25-percent rate (a 0.25 rate). Third, the rate is widely used. Wide use means the data are available for comparison. An organization's quit rate is interpreted most meaningfully when compared with the rates of similar organizations.

The quit rate also has two disadvantages. First, the rate has no precise meaning. A quit rate of 100 percent for a year could mean that all of the employees turned over once during the year, that half the employees turned over twice , while the other half remained stable, that a quarter turned four times, or so on. These different ways of yielding 100 percent have very different implications for the organization. For example, effectiveness may be more adversely influenced if all of the employees turn over than when employees from one set of positions turn over four times.

Second, the quit rate is misleading because it does not control for variables related to turnover. The most important uncontrolled variable is length of service. If an organization is increasing in size, it will be characterized by a high quit rate because of the higher turnover rate of its newly hired employees. This high quit rate will be evident even if the organization experiences very little turnover of experienced employees. Organizations with high quit rates are usually thought to have relatively low effectiveness because of the basically negative impact that turnover is believed to have on effectiveness. Organizations that are increasing in size, however, are often responding to increased demand for their output, which in the long run probably portends increased effectiveness. The quit rate is especially misleading when the size of an organization is increasing.

Length of Service

The average length of service of voluntary leavers is the median length of service of all employees who leave voluntarily during a period. This measure, it must be stressed, only focuses on the leavers. Another common measure of turnover computes an average length of service for all employees currently in the organization, focusing on stayers rather than leavers. Since there are often wide variations in the lengths of service among the voluntary leavers, this measure uses the median to more accurately represent the central tendency. The average that focuses on stayers uses the arithmetic mean to represent the central tendency.

There are three advantages of the average length of service of voluntary leavers. First, the average is relatively easy to compute. Comparison of the list of employees at two times will indicate the leavers during the period. The voluntary leavers must then be selected from the list. Personnel offices typically keep records of when each employee started working for the organization, and with this information the median length of service of the voluntary leavers can be computed. Using the median rather than the arithmetic mean does not create any serious difficulty in the computation.

Second, this average is readily understandable. It is sometimes confused with the average based on the stayers rather than the leavers. Third, the average indicates which employees, by length of service, are leaving the organization. An organization that is losing its experienced employees will be in a very different situation with respect to effectiveness, for example, than an organization that is losing its inexperienced employees. If experienced employees are leaving voluntarily, then the average will be higher than if inexperienced employees are leaving. The utility of the average is enhanced by its ability to indicate which employees are leaving the organization.

The average length of service of voluntary leavers has two disadvantages. First, it is relatively difficult to obtain an adequate sample size for computation of the average, because the measure is based only on the voluntary leavers during a specific period. It takes a fairly large unit to have a sufficient number of voluntary leavers to yield a stable statistic. As a result, the average is mostly restricted to fairly large units, either organizations or subsystems within organizations. Second, since the average indicates which employees, by length of service, are leaving the organization, it does not indicate how much voluntary turnover characterizes the organization. The volume of voluntary turnover that characterizes an organization is important because of the costs that this turnover creates for the organization; the greater the turnover, the greater the costs. Because of these costs, it is important to know how much turnover is taking place in an organization. The utility of the average is lessened by its inability to indicate the volume of turnover.

The quit rate and the average length of service of voluntary leavers complement each other very well. It is important for organizations to know both how much voluntary turnover they are experiencing and which employees are leaving. The quit rate indicates volume and the average indicates who is leaving (by length of service), each measure thus supplying an important piece of information. Our recommendation is that organizations use these two measures to assess voluntary turnover.

Data Collection

Let us now indicate, based mostly on our experience, some problems in collecting data about voluntary turnover from organizations. The size of the organization makes a major difference in collecting this data, and we will be sensitive to this difference in the following discussion. Generally, it seems to be easier to collect valid and reliable data about voluntary turnover in smaller organizations. We mostly collect our data by using records and interviewing key employees, but since records are so important in this type of data collection, these procedures are often labeled as "based on records." Large and small organizations typically have individuals responsible for "personnel," who are usually the key individuals in data collection. The following discussion assumes the existence of personnel officers. We will first focus on identifying the leavers and then consider identification of those who leave voluntarily.

We generally use payroll records to determine leaving or staying. The names on the records at one point in time are compared with the names at a second point in time. If a name that was present at the first time is missing at the second time, then the employee is considered to be a leaver. Employees whose names are on the records at two consecutive times are naturally considered to be stayers.

Payroll records have two advantages for researchers. Nearly all organizations have such records, which are now mostly produced by computers, and organizations strive to maintain accurate records. These advantages are what prompts us to use these records to determine leaving or staying. We have considered other records, such as various types of personnel rosters, but always come back to payroll records because of the advantages indicated.

There are, however, five problems with payroll records. First, since members of governing boards (such as directors, trustees, and commissioners) generally receive some money from the organization, their names often appear on payroll records. Members of governing boards are not usually considered to be employees of the organization, since they represent the interests of a constituency outside the organization and promulgate most of the norms that employees are expected to follow. Therefore, the staying or leaving of board members should not enter into the computation of turnover statistics; their names must be removed.

Second, women who marry often change their names, leading to the possibility of counting an individual as a leaver who has merely changed her name. Researchers have to request specifically this information from the personnel officers, since officers merely change the records when notified of a marriage. There is usually a record somewhere requesting the change in name. It is easier to obtain this information about changes in names due to marriage in smaller organizations, since the personnel officers in these situations have available more nonwork information about the employees than in larger organizations.

Third, some employees quit and are rehired between the two points of comparison. This is not usually a serious problem, since there are not too many of these employees, but researchers should be aware of the possibility. When we can locate these individuals, and this is usually in the smaller organizations, we count them as stayers.

Fourth, individuals who go on "leaves of absence" sometimes pose a problem. The most common example of this type of individual is a woman who is pregnant. These individuals are not paid by the organization, and their participation in the operation of the organization is minimal. We consider these individuals to be members of the organization, however, since they are still officially subject to organizational sanctions—they still can be fired, for example. These individuals also will soon resume full participation in the operations of the organization. Since the names of these individuals who are on leave continue to appear on the payroll records although they usually receive no money from the organization, we have few problems with the classification of these individuals. A problem would arise if these individuals were to be removed from the payroll records. The treatment of these individuals, with respect to the payroll records, should always be checked.

Fifth, the payroll records sometimes contain the names of individuals hired on a temporary basis to replace, for instance, employees who are absent. These temporary employees seldom work more than two or three days a month. In hospitals, these individuals are often referred to as "on call" employees. We do not consider these individuals to be members of the organization, since their participation in the operation of the organization is minimal. Unlike the individuals on leaves of absence, temporary workers seldom participate fully in organizational affairs. Their names must be removed from the payroll records. This removal is important, since some organizations have quite a few of these temporary employees, who are also often concentrated in some work units. The personnel office can usually identify the temporary employees or indicate where their names can be found. Work units, for instance, often maintain a list of temporary employees.

After the leavers have been identified, the voluntary leavers must be located. This location is mostly a matter of excluding the relatively small numbers of involuntary leavers. We have consistently encountered four problems in separating out the involuntary leavers. First, there is always some difficulty with dismissals, which we naturally consider to be involuntary turnover. Some employees "resign" under pressure and are in effect dismissed. Interviews are usually required to establish the fact of dismissal. In small organizations, dismissals are commonly known to the personnel officers, and the names can readily be obtained if sufficient rapport has been established by the researcher with the personnel officer. In larger organizations the personnel officers must usually rely on forms that indicate dismissal, and it is difficult to interview all the first-line supervisors, who know the most about the dismissals. It is thus very difficult to locate all the dismissals in a large organization. About the best that a researcher can do in a large organization is to work with several personnel officers, trying to find officers who have a significant level of informal interaction throughout the system and who have been employed a long time.

Second, a decision must be made as to whether employees who resign because of pregnancy are to be considered as voluntary or involuntary turnover. We consider resignation due to pregnancy to be voluntary turnover. Many women in contemporary organizations become pregnant, give birth, take very brief leaves of absence, and then return to work. If a woman gives birth and resigns her job, she is explicitly or implicitly making a decision to give priority to the kinship role rather than to the occupational role. We thus see no reason to classify resignation due to pregnancy as involuntary turnover, especially given current knowledge about birth control.

Third, retirements can also pose a problem. Historically, most individuals who retired did so because of organizational rules mandating retirement at a specific age. Such retirement was properly classified as involuntary turnover, and this was all rather straightforward. Currently, however, many individuals are taking "early retirement" before organizational rules require them to do so. Early retirement seems clearly to be an instance of voluntary turnover. Researchers, in short, must be careful not to automatically assume that retirement is involuntary. Individuals in the personnel office usually know whether or not employees have taken early retirement.

Fourth, a few individuals always resign for "health reasons." Where serious medical problems exist, we classify these individuals as involuntary turnover. Researchers must probe, however, to obtain information about these health reasons. Some of these individuals are clearly incapacitated and can no longer work; as such they are instances of involuntary turnover. Other individuals, however, are perfectly healthy and use the health label to leave with a legitimate reason a job they want to leave. Some of the individuals who resign because of health reasons are working elsewhere. In our experience, it is easier to obtain information about the individuals who resign for health reasons from smaller organizations. In large organizations these individuals seem to disappear, and it is difficult to find people who know about them.

NOTES

1. Information in this chapter is mostly based on Price's codification of the turnover literature (1977, pp. 3–23) and our two empirical studies of turnover (1981; 1986 forthcoming).

2. The average length of service of voluntary leavers is probably not a valid indicator of voluntary separations, since it only provides descriptive information about the leavers. We include the average in this chapter because it provides valuable information supplementary to the widely used quit rate.

30

WORK-GROUP COHESION

Definition

Work-group cohesion is the extent to which employees have close friends in their immediate work units. Close friends, or "good friends," represent considerably more involvement than casual friends at work, whereas close friends typically represent much less involvement than kinship-type relationships. The immediate work unit refers to the lowest official unit in an organization. For example, the Sociology Department in a university is an immediate work unit, whereas the College of Liberal Arts is not. The traditional emphasis in organizational research has been on having close friends in the immediate work unit rather than having them just somewhere in the organization. Work groups may be as small as two individuals, but organizational scholars have mostly focused on the larger groups.

Historically, the organizational concern with work-group cohesion has its intellectual roots in the Western Electric Research conducted at Harvard by Mayo and his colleagues between 1927 and 1932 (Mayo 1933, 1945; Roethlisberger and Dickson 1939). The Western Electric researchers never used the term "work-group cohesion" to indicate the type of social interaction that interested them. Research on the German and American armies in the 1940s used the term "primary groups" to describe the type of work groups of interest to Mayo and his colleagues, although few organization researchers currently use this label. In the 1950s the term "cohesion" began to be used by researchers at the Survey Research Center (Libo 1953; Seashore 1954) to describe these types of work groups. The label we have chosen is based on this SRC tradition.

Measurement

The 1972 edition of this handbook had no measure of work-group cohesion, though we have been trying to measure work-group cohesion for about a decade in connection with our research on absenteeism and turnover. In the mid 1970s Price and Bluedorn (1980) developed a measure that was related to nursing turnover in a single hospital. The label "integration" was used in this research to refer to what we now label as work-group cohesion. This same measure, still referred to as integration, was used by Price and Mueller (1981) in the late 1970s to explain nursing turnover in seven hospitals. The measure was not successful in explaining nursing turnover in this study, and we identified a major error in our conceptualization. The error in these two studies of nursing turnover was our focus on close friends in the hospitals rather than in the immediate work units.

In the early 1980s Price and Mueller (1986 forthcoming) developed a second measure of work-group cohesion to study absenteeism and turnover in five hospitals. This second measure examined work-group cohesion (still termed integration) in the immediate work units rather than in the hospital as a whole and was related to turnover but not absenteeism. We have now modified the second measure, and two of our colleagues have used this modified measure in new research. Our colleagues continue to use our early label of integration. It is this modified measure, labeled the "Work-Group Cohesion Index," which we use as the selection for this chapter. Our preference is not to present one of our measures, but since we could find no index of work-group cohesion whose psychometric properties are better than those for our index, we will recommend ours. Finally, since work-group cohesion seems to be a more widely used label than integration and has fewer meanings, we will use it.

BOYER, SORENSEN

Description

The studies of Boyer and Sorensen are discussed in Chapter 12 on Distributive Justice and will not be described again. As with the Distributive Justice Index, the Index of Work-Group Cohesion reported here is based on the research on turnover and absenteeism by Price and Mueller (1981; 1986).

Definition

Both authors refer to their concept as integration, but define it the same as we define work-group cohesion: the extent to which employees have close friends in their immediate work units.

Data Collection

Both studies used self-administered questionnaires in which five items were designed to measure work-group cohesion: "(1) To what extent are the people in your *immediate work group* friendly? (Your immediate work group consists of the people with whom you have the most contact.) (2) To what extent are the people in your immediate work group *helpful* to you in getting your job done? (3) To what extent do the people in your immediate work group take a *personal interest* in you? (4) To what extent do you *trust* the members of your immediate work group? (5) To what extent do you *look forward to being with* the members of your immediate work group each day?"[1] Five response categories were provided for each item. For Item 1 these are "very friendly, quite, somewhat, very little, not friendly at all"; for item 2 they are "very helpful, quite, somewhat, very little, not helpful at all"; for item 3 they are "very interested, quite, somewhat, very little, not interested at all"; for item 4 they are "a great deal of trust, quite a lot, some, very little, no trust at all"; for item 5 they are "very much look forward to being with them, quite a bit, some, very little, do not look forward to being with them at all."

Computation

In both studies the scores for the five items are summed for each respondent. Scores of one to five are assigned to the response categories, with one assigned to "not friendly at all," "not interested at all," etc. and five assigned to "very friendly," "very helpful," etc. The range of possible scores is zero to 25. The mean is 18.9 and the standard deviation is 3.9 for the Sorensen study, whereas the corresponding statistics for the two Boyer samples are 9.5, 3.7, and 20.4, 3.7.

Validity

In both studies factor analysis was used to assess convergent and discriminant validity. Both Boyer and Sorensen found that the five items load together when factor-analyzed simultaneously with items representing a number of other constructs measured in the studies.[2]

Reliability

Cronbach Alphas are available for both studies: Sorensen = 0.88; Boyer 1 = 0.89; Boyer 2 = 0.89.

Comments

This Index of Work-Group Cohesion, although not yet used in published work, is based on considerable research by Price and Mueller (1981, 1986). Since the two studies in which the index was used have been influenced by the authors of this handbook, it is not surprising that their definition is consistent with the one we present. The minor wording variations in the two studies seem not to be problematic. The descriptive data should provide a basis for comparisons when the measure is used. The data suggest that the measure has both adequate validity and adequate reliability.

Sources

Boyer, M. 1985. Turnover within the first year of dental hygiene employment: A test of Price's causal model of turnover (unpublished paper).
Sorensen, W.B. 1985. A causal model of organizational commitment (unpublished Ph.D. dissertation, Univ. of Iowa).

NOTES

1. Boyer used "work group" and not "immediate work group" in the wording; Boyer also used "people" rather than "members."
2. These are identified in Chapter 12, Distributive Justice.

31

WORK LOAD

Definition

Work load is the amount of performance required in a job.[1] The greater the amount of performance required, the greater the work load. "Role overload" is a label under which literature pertinent to work load is often found. The substantial literature on stress, stemming mostly from research by Kahn and his colleagues (Kahn et al. 1964), also refers to work load, along with role conflict and role ambiguity, as important types of stress in organizations.[2] "Stressors" rather than "stress" is sometimes used as a label for the concept of work load. A large work load, for example, is a stressor.

Measurement

Caplan and his colleagues have performed the most widely-cited research in the area of work load, and the selection for this chapter uses one of their studies. This research by Caplan and his colleagues is part of the immense amount of organization scholarship originating from the Survey Research Center of the University of Michigan.

CAPLAN, COBB, AND FRENCH (1975)

Description

This study investigated the efforts of stress, social support, and personality on the quit rate for cigarette smoking. Two hundred administrators, engineers, and scientists from the National Aeronautics and Space Administration, representing an 83-percent response rate, were studied. The sample is above average with regard to level of education and income.

Definition

Work load, one of three types of stress examined, is not defined. Five illustrative questionnaire items are provided to indicate its meaning.

Data Collection

Nine questionnaire items were used to collect data about work load: "The number of projects and/or assignments you have; The amount of time you spend in meetings; The amount of time you have; The number of conflicting demands you have; The work load, the amount of things that need to be done; The time to think and contemplate; The quantity of work you are expected to do; The extent to which you feel you never have any time; and The number of phone calls and office visits you have during the day" (Cook et al. 1981, p. 204). Each of the nine items has five responses: very little, little, some, great, and very great.

Computation

A five-point scoring system was used for the nine items. "Very little" was scored as one and "very great" was scored as five for all items except the third and sixth, which were reverse scored. The individual scores were summed to create an index score. Means of 3.7, 3.4, and 3.1 are reported, respectively, for administrators, engineers, and scientists (p. 213). A mean for the entire sample is not reported, and no data are included about the dispersion of the scores.

Validity

Two sets of data are useful in assessing validity. First, convergent and discriminant validity are indicated, since all items in the index for work load correlate significantly with one another and correlate more highly within the index than with items used to measure other concepts, such as the two other measures of stress and social support. Second, the quit rate for cigarette smoking is greatest when the work load is lowest. This result is consistent with the literature reviewed, providing evidence for construct validity.

Reliability

The estimated reliability is 0.87 (p. 212).[3]

Comments

Work load is not defined in this paper because it is defined elsewhere in the research by Caplan and his colleagues (Caplan and Jones, 1975). Our definition of work load is based on the research by Caplan and his colleagues.

Three comments are germane to data collection. First, this study identifies only four of the nine questionnaire items used to collect data about work load. Fortunately, all of the nine items are easily available elsewhere (Cook et al. 1981, p. 204). Replication is made easier if all of the items are included in the report of the research. Second, only the extreme responses—very little and very great—are provided by Caplan and his colleagues. Again, all five responses are easily available elsewhere (Cook et al. 1981, p. 204). Third, the ninth item, dealing with "phone calls and office visits" will not be applicable to many employees and should be dropped.

The means for administrators, engineers, and scientists are important descriptive data, but the mean for the sample, plus the standard deviation, should have been provided. The validity and reliability of the index are adequate. The fourth item, dealing with "conflicting demands," however, appears to be more appropriate for the measurement of role conflict than for the measurement of work load. Because the correlation matrix is not included in the report, we cannot examine the coefficients for "conflicting demands." A factor analysis, with items about role conflict included, would have provided more adequate data with which to assess convergent and discriminant validity. The main point, however, should not be obscured: The psychometric properties of the index are satisfactory.

Source

Caplan, R.D., S. Cobb, and J.R.P. French, Jr. 1975. Relationship of cessation of smoking with job stress, personality, and social support, *J. Appl. Psychol*. 60:211–219.

NOTES

1. This definition is based on research by Caplan and Jones (1975).

2. We use the measures of role ambiguity to assess communication and have no measure of role conflict. Rather than "work load," the research on stress by Kahn and his colleagues mostly refers to "role overload."

3. This measure of reliability is formula 6.18 of Nunnally (1967, p. 193).

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CONCLUSION

The concluding chapter offers some reflections on organizational measurement since 1972, makes some suggestions for future research on measurement, advances an administrative suggestion that might facilitate measurement research, and comments on the difficulty of doing surveys in an era of specialization.

POST-1972 REFLECTIONS ON ORGANIZATIONAL MEASUREMENT

We finish this handbook with three impressions regarding organizational measurement since 1972, the publication date of the first edition of the handbook. We are impressed, first of all, with how few measures have survived since 1972. Only seven measures from the 1972 edition of the handbook appear in this edition. These seven measures are found in the chapters on autonomy, centralization, coordination, formalization, bases of power, and satisfaction (two measures). Four of these seven measures (autonomy, coordination, formalization, and bases of power) have somehow avoided serious measurement challenges by other scholars. The Minnesota Satisfaction Questionnaire, used in this edition of the handbook, existed in 1972 but was not in that edition. The inference we draw from these changes is that measures are being advanced by scholars without adequate development and assessment work. It is interesting that two of the measures that have survived, the Job Descriptive Index and the Minnesota Satisfaction Questionnaire, have been subjected to extensive investigation. This impression partially stimulates a strategy suggestion that we advance in the following section on future research.

We are impressed, second, with the growth of measurement research since 1972. This is a pattern we have applauded repeatedly throughout the handbook. There was some measurement research available to Price when he compiled the first edition of this handbook, but the quality and quantity of this type of research has expanded significantly since 1972. Although the growth of this research is encouraging, one negative aspect is apparent. Very few of the researchers doing this measurement research specialize, to any extent, in this type of work. The usual practice is to do one, maybe two, measurement projects and then to move to substantive topics. Pierce (1978) is one of the few exceptions to this lack of specialization. We treat this issue of specialization again in the next section.

Third, we are impressed with the lack of measures based on objective data, such as records and observations. Only 11 of the 30 substantive chapters have measures based on objective data: absenteeism, administrative intensity, complexity, departmentalization, effectiveness, innovation, mechanization, pay stratification, productivity, size, and turnover. These measures are generally among the least impressive in the handbook; the best researched and most widely used measures are those based on questionnaire data. Objective measures are widely recommended but seldom developed and used. Throughout the handbook we have suggested objective measures to improve organizational measurement. Let us, however, again emphasize another point repeatedly made in the handbook: measures based on objective data are not intrinsically better than measures based on subjective data. Both types of measures must be critically examined. It would indeed be unfortunate if objective sources were used more often, but used uncritically.

RECOMMENDATIONS FOR FUTURE MEASUREMENT RESEARCH

Much measurement research needs to be conducted. The current measurement issues delineated in the first chapter must certainly be addressed. Unless these basic issues are addressed quickly and efficiently, organizational scholars will find it difficult to move ahead in the construction of theoretical models. While some of the concepts described in this handbook have quite acceptable measures, many lack adequate measures. These needs have been commented on in the handbook and must also be quickly and efficiently addressed. Let us, however, focus at this point on another type of need, namely the need for a strategy of measurement research. We have two suggestions. Our major suggestion is that there should be greater specialization in measurement research. Our secondary suggestion is that researchers take advantage of analytic techniques, now readily available, for building assessment of measurement issues into analysis of substantive concerns. We begin with our major suggestion, which requires elaboration and justification.

Two different role models are available regarding the recommended specialization. The first model is that of Smith and her colleagues (1969), who developed the widely used Job Descriptive Index (JDI) to measure satisfaction. Smith et al. sought only to develop a measure of satisfaction; they did not seek to develop and estimate theoretical models regarding either the determinants or impacts of satisfaction.[1] Development work extended over a period of six years, through four major studies. A total of 2662 subjects were used in the six studies. Several scoring methods were tested, and the most successful, weighted direct scoring, was retained. Using inter-item and inter-measure correlations, cluster analysis, and various factor analyses, Smith et al. carefully assessed discriminant and convergent validity for the JDI. Reliability was assessed by checks for internal consistency and by test–retest procedures.

The second role model available for specialization is that of Van de Ven and Ferry (1980), who developed the Organizational Assessment Instrument (OAI). Van de Ven and Ferry had both measurement and substantive concerns. They developed a large collection of instruments (the OAI) designed to assess the characteristics of the context, structure, and behavior of the organization, the work group, and specific jobs. Their research also sought to explain, as their substantive concerns, the relationship between these characteristics and organizational effectiveness. Three versions of the OAI were tested within a large ($N = 1700$) organization over seven years. Intrinsic and extrinsic validity were demonstrated for each of the measures in the five modular parts of the OAI. Parts of the OAI were also tested in a second organization, and either the whole or selected sections were tested in eight other studies done by different researchers.

Smith and her colleagues and Van de Ven and Ferry represent considerable specialization in measurement. Few scholars have specialized in measurement as much as these individuals. We suggest a strategy somewhere between Smith et al. and Van de Ven and Ferry, being a little closer to the former than to the latter. We are awed by what Smith et al. have done, but we do not think most scholars will specialize this intensively. This form of specialization is probably an unrealistic alternative; too much time and effort were invested in a single concept. We also stand in awe of the effort by Van de Ven and Ferry. It is very difficult, however, to study a substantive topic such as effectiveness and simultaneously develop a set of different measures. Investigation of a substantive topic typically requires a different type of research design than investigation of a measurement topic. Substantive topics, to be successfully studied, generally demand homogeneity in sample and site to control for extraneous variables, whereas measurement topics, to be successfully studied, usually demand heterogeneous samples and sites to develop measures that can be widely used. Given the current level of knowledge in the study of organizations, it is most difficult to master the literature sufficiently to develop a set of different measures. In our view, scholars should specialize for a few years in the development of measures for one or two concepts; substantive concerns definitely should not be combined with measurement research. After this time, the scholars can move to the conduct of measurement research on one or two other concepts.

There are three reasons for our recommended specialization. First, measurement research, to be competently performed, requires mastery of a large and ever-expanding body of technical knowledge about statistics and methodology. The ordinary researcher cannot hope to master this knowledge. Second, substantive knowledge about the topics to be investigated, such as satisfaction for Smith and her colleagues, is also large and growing. This literature must be mastered to perform competent measurement research. Third, as indicated in the preceding paragraph, the design for the investigation of substantive topics is generally quite different from the design for the investigation of measurement topics. Joint research projects, involving perhaps two or three investigations, are a feasible way to implement the recommended strategy. Some scholars can specialize in substantive topics while others specialize in statistics and methodology. All scholars involved in such work, however, should focus only on measurement. Implementation of the recommended strategy should result in more JDIs by the 1990s.

We recognize that the specialization we recommend does not constitute a total measurement strategy. Other strategic elements must be attended to: selection of samples and sites, which concepts to research, investigation of the measurement issues discussed in the first chapter, and so forth. Our belief is that a total measurement strategy should have as one of its elements a greater degree of specialization than has heretofore existed, and we have sought to indicate the form that specialization should take.

We also recognize that the recommended specialization will not come about without rewards. Substantive work, such as building theoretical models, has generally been more highly rewarded in academia than measurement work. Throughout the handbook we have sought to recognize a number of outstanding measurement projects currently existing in the field of organizational studies.

As just argued, we believe that if measurement research is to proceed, special research programs directed toward measurement questions must be undertaken. We recognize, however, that the majority of organization scholars will continue to pursue research in their substantive area(s) of interest, and most measurement research that emerges will be by-products of substantive research. Our secondary suggestion for measurement research is directed toward those who conduct this kind of research.

There now exist several data-analytic and computer techniques for incorporating measurement properties directly into the strategies for estimating and testing theoretical models. The best-known and most often used of these is LISREL (linear structural relations), developed by Jöreskog and Sörbom (1981).[2] It is best applied to data situations with multiple indicators of most of the concepts and involves an analytic strategy whereby the researcher specifies (1) the causal relationships among the concepts (unmeasured or latent constructs), relying on theory and past research, and (2) the relationships among these concepts and their measures (empirical indicators). The former is referred to as the structural equation model, and the latter as the measurement model. The researcher's primary goal is to estimate and test the relationships in the structural equation model, but in so doing the validity and reliability of the measures are taken into account. Because the underlying statistical estimation technique involves a confirmatory factor-analytic model, the strategy involves assessing the extent to which the indicators of a concept actually measure that concept—the validity concern. In addition, the estimation technique produces estimates of the relationships among the concepts (the real goal of the study), which are corrected for the unreliability of the measures—the reliability concern.

This technique also allows for assessment of many of the thorny problems that have confronted researchers for years. For example, overall test statistics are produced for assessing the fit of the theoretical model to the data; reciprocal effects among variables can be estimated; correlated measurement error (such as response-set bias) can be assessed and corrected for; panel and time-series data, with any associated autocorrelation, can be routinely handled; multigroup comparisons (interactions) can be made and tested.

To give a specific example of how this strategy could prove fruitful, we recall the debate introduced in the introductory chapter, regarding the use of objective and subjective measures. We suggested that both types of measures should be obtained and built into theoretical models. The researcher would be interested in questions such as whether these two types of measures capture different constructs, the validity and reliability of the measures for the concepts, and the effect of any unreliability on the relationships among the concepts. LISREL is ideal for analyzing models of this type, and we strongly recommend its use. There are now a large number of individuals knowledgeable in its use, and it is becoming a standard component in graduate-level statistics training. In addition, there exist some excellent treatises (for example, Long 1983a; 1983b) on why and how to use LISREL.

AN ADMINISTRATIVE SUGGESTION

Throughout this handbook we have noted instances in which research reports were incomplete. The most common omission was failure to publish the instruments of data collection in research reports. Typically, only illustrative fragments of the instrument were presented in the reports. Also often omitted were correlation matrices, detailed information about the results of factor analysis, and descriptive statistics (means and standard deviations) for the measures. This incompleteness is important because it makes replication impossible, and without replication, theoretical models cannot be efficiently constructed and tested. These omissions nearly always result from the desires of journal editors to publish as much quality research as possible within severe space limitations. In short, there are no villains, but necessary data are not being published.

An often-recommended solution to this dilemma is for the reader to obtain the necessary documentation from the researchers. Indeed, researchers often indicate that they will supply the needed documentation, and most articles bear addresses to contact at least one of the researchers. This seemingly simple solution does not work most of the time. Sometimes the promised documentation is forthcoming within a reasonable period and the research can proceed. Such responses are deeply appreciated. More often, however, the documentation is not forthcoming. Researchers do not always respond to requests; sometimes they move and mail is not efficiently forwarded; researchers go on leave and resent intrusions into their time; they begin new projects and file away the requested documentation; they respond but not with exactly what was requested; researchers die or become seriously ill. Another way must be found to make the necessary information available.

Our first suggestion is that researchers make a habit of reporting descriptive statistics about measures. This includes the means and standard deviations for the measures, as well as validity and reliability data. As just discussed, it is unlikely that journal editors will allow a complete description of index construction, but the basic descriptive data do not take up much space and should routinely be presented.

Our major suggestion is that researchers deposit critical documentation with a highly respected and stable social-science research organization, such as the Survey Research Center (University of Michigan) or The National Opinion Research Center (University of Chicago). To defray the administrative costs of the research organization, users should be required to pay a fee to obtain the needed documentation. No charge should be assessed the researcher who submits documentation to the research organization. We suggest, in short, a bureaucratic solution to the dilemma—a natural solution for organizational scholars!

SURVEYS AND SPECIALIZATION

It is difficult to provide a survey, such as is attempted in this handbook, in an era of specialization. Each of our 30 substantive chapters represents an area of specialization, and it is impossible for us to master each of these bodies of literature. One of us (Price) has specialized in the study of turnover, and he is keenly aware of how much is excluded from our chapter on turnover. Other specialists will no doubt feel the same about their areas.

Our backgrounds should have prepared us to do this survey. Price has taught introductory courses in organizations at the graduate level for more than 20 years. This teaching experience should have acquainted him with the main issues in the field of organizational study. Price did his graduate study in organizations with Merton at Columbia. Mueller, who did his graduate work at Wisconsin, is a statistician–methodologist with a strong interest in organizational studies. He has taught graduate-level courses in statistics and methods for more than 13 years, experience that should have familiarized him with most of the main measurement topics encountered in the study of organizations. In addition, both of us taught two measurement seminars, where we reviewed with small groups of graduate students the measurement literature since 1972.

In retrospect, however, we must conclude that such preparation is not really sufficient to do this measurement survey. What has mostly kept us at this impossible task is the belief that the handbook is necessary if the study of organizations is to move ahead in building theoretical models. To move ahead, measures must be standardized, terminology for the concepts should become more uniform, and improvements are urgently needed regarding many measures—all purposes that we are trying to achieve with this handbook. We hope that we have not offended the specialists too greatly and that our immodest purposes have been modestly achieved.

NOTES

1. Smith et al. also sought to develop a measure of satisfaction with retirement.

2. Bentler's (1980) work in this area is also well recognized and accepted.

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